



# 2021 Materiality Assessment for U.S. Dairy

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## EXECUTIVE SUMMARY

In 2021, the Innovation Center for U.S. Dairy conducted a refresh of the national materiality assessment completed in 2019. The process was designed to review the topics from the 2019 assessment and to consider any necessary changes to ensure that the latest insights and stakeholder expectations and interests are reflected.

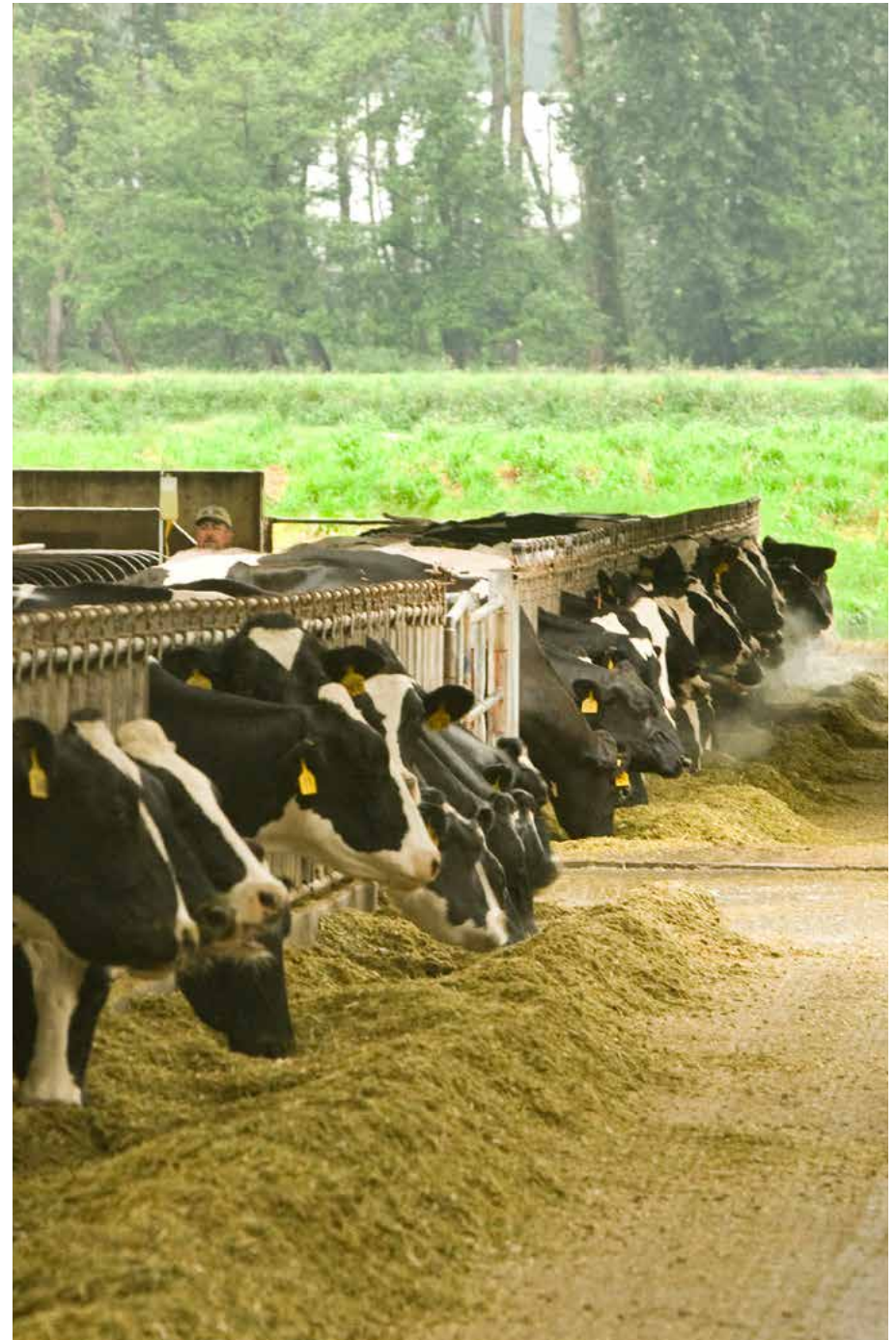
Like the initial materiality assessment, the refresh involved extensive stakeholder engagement and participant input from hundreds of stakeholders – both within and outside the dairy value chain. The results help inform strategy and future industry efforts and are intended to support U.S. dairy companies in conducting their own assessments.

The 2021 Materiality Assessment for U.S. Dairy remains aligned with GRI materiality principles and methodologies, as well as the 11 Global Criteria of the **Dairy Sustainability Framework (DSF)**. It is also recognized by the **Sustainable Agriculture Initiative Platform (SAI Platform)** **Sustainable Dairy Partnership (SDP)** supply chain assurance model. When accompanied by the Innovation Center's **Materiality Guide for U.S. Dairy Companies**, the national findings of this resource can inform and simplify the company-specific materiality development requirements within the SDP.

### Key Findings & Observations

**The refresh reinforced the importance of existing priorities, while identifying additional sustainability topics for consideration.**

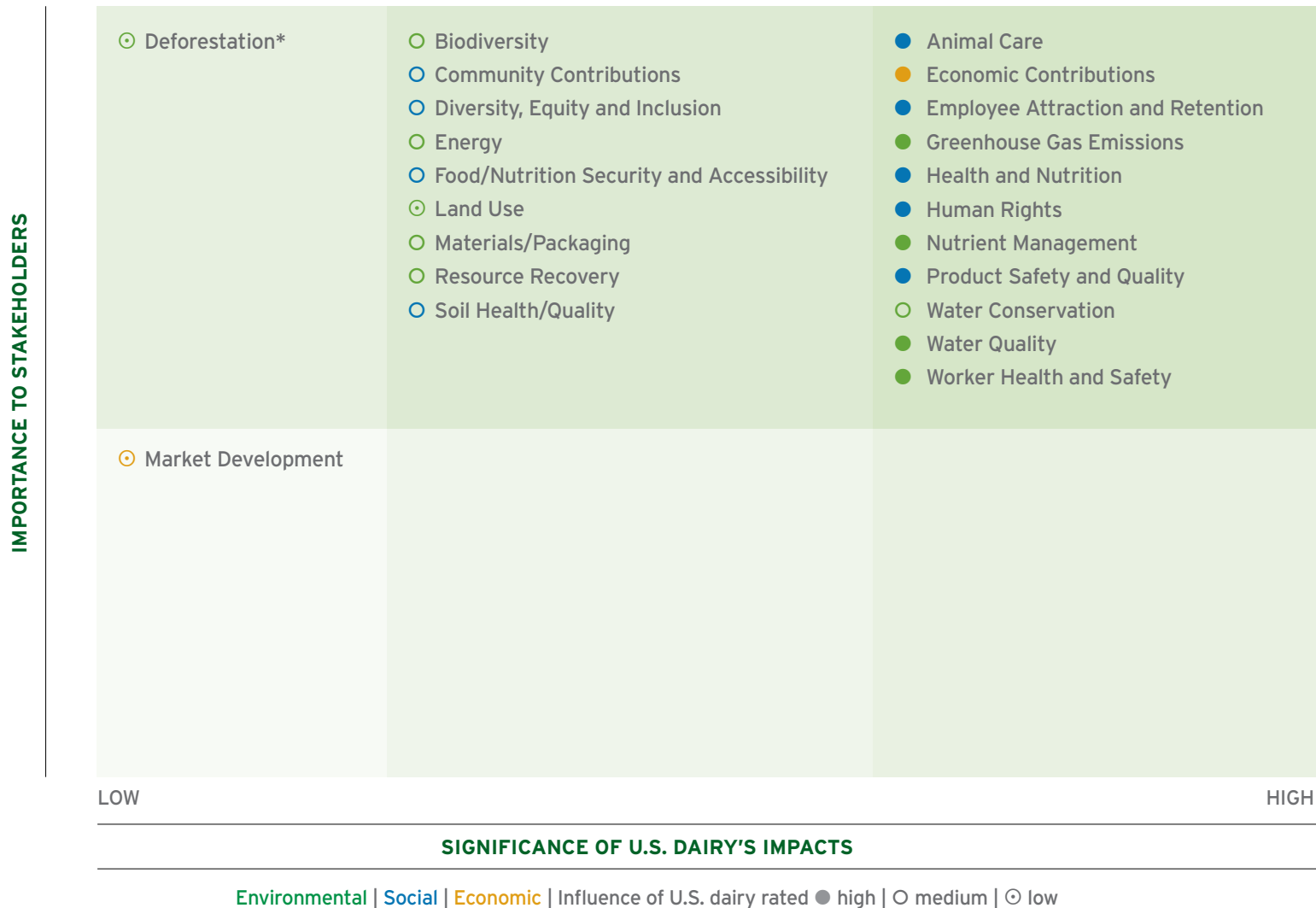
- Since the 2019 assessment, investor, marketplace and policy pressures for GHG emissions reduction in agriculture have continued to rise.
- Stakeholder attention on and expectations for disclosure and progress on water (conservation and quality) and natural capital/biodiversity have expanded.
- Workforce consistently ranks as an increased priority, with all stakeholder groups citing a need for specificity on key areas of focus.
- Food and nutrition security is seen as an area of opportunity for leadership by retailers and the dairy community.
- Sustainable packaging is a key priority for dairy processors and customers, with a particular focus on plastic waste.
- The protection of human rights remains a foundational priority in U.S. dairy, with increased interest in communicating this topic.



## 2021 U.S. Dairy Materiality Grid

The following grid categorizes topics based on level of importance to stakeholders, significance of U.S. dairy's impacts, and influence of U.S. dairy, with the highest priorities in the upper right. Topics are in alphabetical order within influence levels. All topics other than market development (as defined by the global Dairy

Sustainability Framework) and deforestation (insignificant material impact by U.S. dairy but noted due to importance to stakeholders) were deemed material in consideration of strategic initiatives and industry efforts. Refer to the Appendix: Topics Overview on page 2 for topic summaries.



Topics within each box are alphabetized.

\*At a national level, deforestation is not seen as materially impacted by U.S. dairy, but it is noted due to importance to stakeholders.

## INTRODUCTION

### Background

Since 2008, the Innovation Center has led national efforts as a pre-competitive, collaborative forum to advance dairy community understanding and management of impacts and opportunities across social responsibility and environmental stewardship landscapes.

A materiality assessment is the process of identifying and prioritizing the sustainability topics that matter most to an organization and its stakeholders, reflecting its most significant impacts. Based on extensive stakeholder input and research, this process details not only what is measured and reported, but also how and why the priorities identified - for example, animal care, greenhouse gas (GHG) emissions or worker safety - are determined.

In 2018, the Innovation Center, in consultation with industry and external stakeholders, conducted the first national materiality assessment for U.S. dairy to help substantiate industry-wide priorities and inform actions. The assessment was reviewed by the Innovation Center Board of Directors and published in May 2019. It has since seen broad use, received recognition and demonstrated value, such as:

- Substantiation and assured validity of **U.S. Dairy Stewardship Commitment** priorities
- Informing industry-wide goals: The 2050 collective Environmental Stewardship Goals to achieve GHG neutrality, optimize water usage and improve water quality by optimizing utilization of manure and nutrients address the top four environmental priorities.
- Raising awareness and understanding of materiality and its importance to the industry
- Linkage to the **Materiality Guide for U.S. Dairy Companies**, which aids dairy companies in conducting their own assessments
- Recognition and alignment by globally recognized dairy platforms, including the **Sustainable Dairy Partnership (SDP)** and the **Dairy Sustainability Framework (DSF)**, to demonstrate U.S. dairy sustainability leadership and simplify supply chain reporting expectations for U.S. dairy suppliers



## Materiality Refresh

Materiality is dynamic: New research findings can affect the significance of an impact, and the interests of stakeholders can evolve quickly. The unprecedented changes and challenges the world faces have brought heightened attention to both long-established and emerging sustainability issues.

Concurrently, the Innovation Center and the U.S. dairy community have taken both new and intensified action across many of these topics. Further, materiality assessments continue to grow in importance to stakeholders, including the world's leading dairy buyers and their institutional investors, and are now an expectation globally and across all sectors.

Recognizing these important shifts, the Innovation Center conducted a refresh of the 2019 national materiality assessment in 2021. The process was designed to review the topics from the 2019 assessment and consider any necessary changes to ensure that the latest insights and stakeholder expectations and interests are reflected.

Like the initial materiality assessment, the refresh involved extensive engagement and input from hundreds of stakeholders - both within and outside the dairy value chain. The results will be used to inform strategy and future efforts and to support U.S. dairy companies in conducting their own assessments.

The following sections cover the process and provide a summary of the results.

### Purpose

The goal of the Materiality Assessment for U.S. Dairy is to identify and prioritize sustainability topics that the industry should recognize and act upon where needed - either individually or through collective efforts such as those coordinated by the Innovation Center. Assessment results are not intended to designate any sustainability topic as unimportant; rather, they are used to prioritize those issues where the industry has the strongest potential to amplify positive impacts and demonstrate improvements over time. The results also highlight areas of high stakeholder interest. The assessment will serve to:

- Inform strategic planning by identifying areas where the industry has the most potential for positive impact
- Strengthen credibility and provide a consistent voice around sustainability topics and action for U.S. dairy
- Aid U.S. dairy companies in conducting their own assessment by providing nationally relevant findings
- Bolster positioning of social responsibility priorities and leadership in the marketplace and global stage

### Scope

The scope of this assessment is limited to dairy feed and farm production and processing within the United States. At the same time, the assessment did consider where impacts occur along the full dairy value chain (page 12). Given the domestic focus of the assessment, activities outside of the U.S. have been excluded, while recognizing they would be relevant in the assessments of organizations with operations and/or business activities beyond the U.S. market.

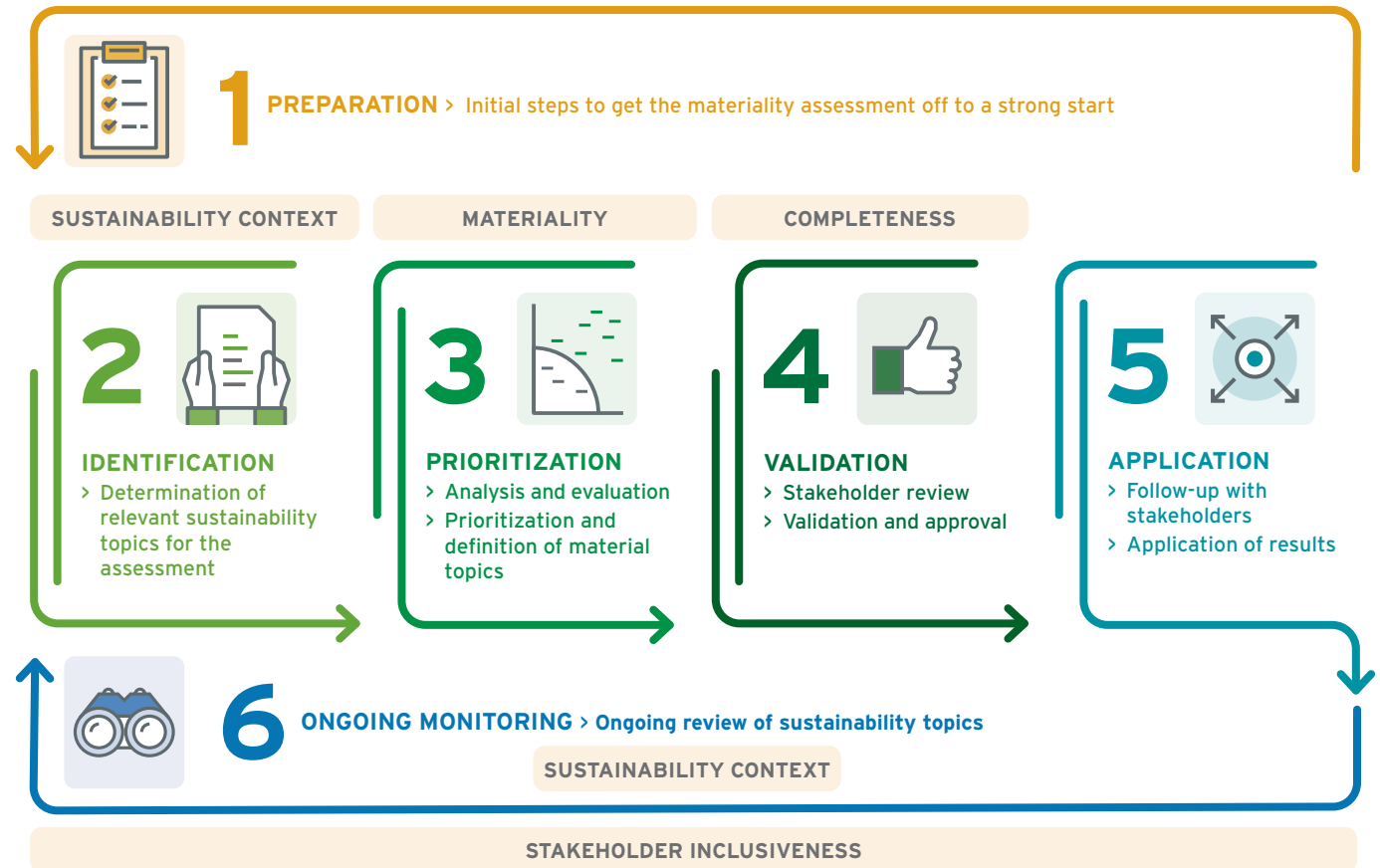


## Process

A materiality assessment is a recognized process to identify and assess potential environmental, social and economic issues that could affect an organization and/or its stakeholders and to organize those issues into prioritized topics to inform decisions related to strategy, actions and reporting.

Innovation Center staff led the materiality assessment and coordinated the iterative development and vetting process through extensive consultation with internal and external stakeholders. A leading sustainability consulting firm, which is a GRI Certified Training Partner, supported the overall process, topic analysis and report development.

The refresh followed steps outlined in the **Materiality Guide for U.S. Dairy Companies**. The process applied the GRI Reporting Principles for defining report content (in colored boxes in the diagram to the right), providing a repeatable approach.



Source: GRI Standards and GRI G4 Sustainability Reporting Guidelines, *Implementation Manual*, 32, with adaptations developed by ISOS Group, Inc.

## Stakeholder Participation

The 2019 national materiality assessment integrated multiple perspectives from the dairy community, customers/brands, consumers, environmental nonprofits and other organizations. This current assessment builds upon the 2019 stakeholder results, which included direct feedback from more than 100 dairy farmers, cooperatives, processors, associations, academics and NGOs; input from regular and

**In 2021, more than 150 representatives from over 100 organizations nationwide took part in discussions and/or completed a survey to inform the identification of topics and their importance.**

ongoing meetings and calls with **Dairy Sustainability Alliance**<sup>®</sup> members and partners related to stakeholder concerns and priorities; comments from stakeholders submitted during the Stewardship Commitment's review periods for metrics development; and listening sessions such as customer forums, training events and targeted stakeholder outreach to solicit input.

In 2021, more than 150 representatives from over 100 organizations nationwide took part in discussions and/or completed a survey to inform the identification of topics and their importance (see sidebar). Stakeholder feedback was gathered through direct engagement and by proxy through peer sustainability initiatives, sustainability reports and other sources.

The Innovation Center's ongoing engagement methods provided multiple opportunities for stakeholders to participate in the process. In addition, individuals and organizations active in formal Innovation Center governance and stakeholder groups along with other interested parties were selected for direct involvement.

## Engagement Summary

**The following methods were used to request and gather perspectives from a wide range of stakeholders:**

- **Facilitated sector-specific and multistakeholder sessions** with interactive polling and discussion to capture both quantitative and qualitative information involving:
  - > 26 dairy farmers from across the country (including a farmer-focused session)
  - > 27 dairy processors (including a processor-focused session)
  - > 12 restaurant, retail and multinational consumer packaged goods companies (including a session focused on food service and retailers)
  - > 147 **Dairy Sustainability Alliance**<sup>®</sup> members (breakout sessions in November 2020 for diverse stakeholders from across the full value chain, along with sector-specific sessions for some participants)
  - > 20 members from the Innovation Center's Environmental Stewardship Committee
  - > 24 members from the Innovation Center's Stewardship Commitment Committee
- **Targeted outreach** through surveys and direct conversations with environmental nonprofits, Innovation Center committees and leading brands:
  - > 43 survey respondents
  - > Individual and group conversations
- **Innovation Center Board review**
  - > CEOs and executives from 22 dairy cooperatives and processors, representing approximately 65% of U.S. milk production
  - > Senior leaders from industry organizations: **Dairy Management Inc.**<sup>™</sup> (DMI), **International Dairy Foods Association** (IDFA), **Milk Processor Education Program** (MilkPEP), **National Milk Producers Federation** (NMPF) and **U.S. Dairy Export Council**<sup>®</sup>



## PROCESS OVERVIEW

### Identification

This stage concentrates on determining relevant sustainability topics for inclusion in the assessment. Relevant topics are those impacts - positive or negative, current or potential - that directly or indirectly occur due to business activities, including consideration of impacts along the value chain.

The 2021 assessment started with the topics within the initial 2019 assessment. In that assessment, the priorities were mapped to the 11 high-level **Global Criteria** of the **Dairy Sustainability Framework (DSF)** - for example, Animal Care and Greenhouse Gas (GHG) Emissions. As the U.S. aggregator and convener for national reporting of the DSF, the Innovation Center actively participates in this platform to demonstrate leadership and dairy's collective role worldwide in sustainable food systems. The DSF is also integrated into the **Sustainable Agriculture Initiative Platform (SAI Platform) Sustainable Dairy Partnership (SDP)**.

While the list of topics to prioritize for the 2019 assessment was primarily focused on DSF criteria, the assessment refresh broadened the topics considered while maintaining alignment with the DSF and further enhancing alignment with the SDP. The topics considered were drawn from stakeholder input and a review of the sustainability landscape and leading frameworks and standards, including:

- **GRI Sustainability Reporting Standards** and sector guidance
- **Sustainability Accounting Standards Board (SASB)** Standards for Agricultural Products; Meat, Poultry and Dairy; and Processed Food
- Sustainability Assessment of Food and Agriculture systems (SAFA) Guidelines (Food and Agriculture Organization of the United Nations)
- The United Nations **Sustainable Development Goals (SDGs)**
- Topics/factors used by the leading sustainability/environmental, social and governance (ESG) ratings agencies, such as Institutional Shareholder Services (ISS), Sustainalytics, Bloomberg and MSCI

Table 1 on the following page lists the 20 topics that were selected for the 2021 assessment refresh.



**Table 1. List of Relevant Topics**

Refer to the Appendix beginning on page 15 for topic descriptions, assessment summary and strategic approaches coordinated through the Innovation Center.

Topics in the 2021 Materiality Assessment	DSF Global Criteria	U.S. Dairy Stewardship Commitment Priority
<b>ENVIRONMENTAL</b>		
Biodiversity	Biodiversity	Biodiversity
Deforestation	<i>Not included</i>	<i>Not included</i>
Energy Use	<i>Not included</i>	Energy Use
GHG Emissions	Greenhouse Gas Emissions	Greenhouse Gas Emissions
Land Use	<i>Not included</i>	Land Use (within Feed Impact)
Materials/Packaging	<i>Not included</i>	<i>Not included</i>
Nutrient Management	Soil Nutrients	Nutrient Management
Resource Recovery	Waste	Resource Recovery
Soil Health/Quality	Soil	Nutrient Management
Water Conservation	Water	Water Conservation
Water Quality	Water	Water Quality
<b>SOCIOECONOMIC</b>		
Animal Care	Animal Care	Animal Care
Community Contributions	Rural Economies	Community Contributions
Diversity, Equity and Inclusion	<i>Not included</i>	<i>Not included</i>
Economic Contributions	<i>Partial in Market Development</i>	<i>Not included</i>
Employee Attraction and Retention	<i>Not included</i>	Workforce Development
Food/Nutrition Security and Accessibility	<i>Not included</i>	Product Contributions
Health and Nutrition	<i>Not included</i>	<i>Partial in Product Contributions and Product Safety and Quality</i>
Human Rights	<i>Partial in Working Conditions</i>	<i>Partial in Workforce Development</i>
Market Development	Market Development	<i>Not included</i>
Product Safety and Quality	Product Safety and Quality	Product Safety and Quality
Worker Health and Safety	Working Conditions	Workforce Development

NOTE: Relevant topics that were identified but deemed more appropriate for consideration within organization-level assessments are included in the 2021 Materiality Guide for U.S. Dairy available online at the Stewardship Commitment's [Research & Resources](#) page.

## Prioritization

This stage involves further evaluating the selected relevant topics so they can be prioritized and the threshold for materiality established. The Innovation Center considered the following three dimensions to inform the topic prioritization:

1. significance of U.S. dairy's impacts, 2. importance of the topics to stakeholders and 3.) influence of U.S. dairy. All three build on the input and results of the 2019

assessment, which includes past efforts to understand and analyze impact areas prioritized through the Innovation Center for over 13 years. The refresh incorporated developments, new research, and national and global trends along with current stakeholder perspectives.

Dimension	Analysis and Evaluation
<p><b>Significance of U.S. Dairy's Impacts</b></p>	<p>The review considered the economic, environmental and social impacts (positive or negative effects) associated with dairy production and processing in the U.S., along with the impact these factors might have on the industry and U.S. dairy's market competitiveness. This outward and internal evaluation helped determine key drivers of value creation and areas of focus for setting strategic objectives.</p> <p>The review built on the 2019 assessment by incorporating industry-wide strategic factors (risks and opportunities) and findings from the Innovation Center's ongoing initiatives, along with academic, government and think tank research and publications. The weighting from the 2019 materiality assessment was carried forward for the applicable topics, and the new topics were similarly evaluated. The review rated significance of U.S. dairy's impacts as high, medium or low based on multiple aspects:</p> <ul style="list-style-type: none"> <li>• Recognized subjects of concern for sustainable development: Resources include the GRI Standards (including the exposure draft of GRI Agriculture, Aquaculture and Fishing Sector Standard), the United Nations Sustainable Development Goals and the objectives of the 2021 UN Food Systems Summit.</li> <li>• Estimable impacts from sources such as the life cycle assessment (LCA) studies, economic impact studies and scientific research in areas such as food safety. This further includes health and nutrition research conducted on behalf of U.S. dairy, the work of Innovation Center committees and analysis involved in developing the <b>U.S. Dairy Stewardship Commitment</b> metrics.</li> <li>• Applicable laws and regulations (see note below)</li> <li>• Inclusion of financially material issues identified in the relevant SASB Standards. SASB defines financially material issues as "the issues that are reasonably likely to impact the financial condition or operating performance of a company and therefore are most important to investors."<sup>1</sup></li> <li>• Inclusion in voluntary standards or agreements and/or in industry programs and initiatives, such as industry-wide goals</li> <li>• Association with significant risks, opportunities and/or core competencies</li> <li>• Commonly reported or publicly communicated among industry peers (e.g., sustainability reports, website pages and marketplace disclosures)</li> </ul>

NOTE ON REGULATORY OVERSIGHT: U.S. dairy operates in a highly regulated environment. The industry considers the level of regulatory oversight, i.e., whether there are laws or regulations governing a certain topic area, in assessing the significance of an impact (higher risk impact areas tend to be more regulated) and in determining the best strategy for approaching a topic area at the industry level. When there are laws or regulations in place, the dairy industry is assured that farms and processors of all sizes and geographies have achieved certain uniform standards. For example, U.S. milk is tested at multiple points to ensure compliance with drug residue laws. When there is an advanced level of regulation and government oversight in place relating to a sustainability topic, the Innovation Center and its members focus on providing guidance materials and training where helpful, such as **antibiotic stewardship resources** and **food safety workshops**.

## Dimension

## Analysis and Evaluation

### Importance to Stakeholders

Stakeholder inclusion and involvement - both within and outside the farm-to-retail dairy value chain - are core components of U.S. dairy sustainability efforts. Internal and external stakeholder input is used to prioritize efforts, direct resources and collaborate on solutions.

Stakeholder perspectives and interests were solicited and incorporated throughout the assessment process. The assessment evaluated feedback on the importance of the topics to stakeholders, using both direct and indirect methods. The estimation of importance to stakeholders built upon the results of the 2019 assessment, which synthesized a wide range of stakeholder input gathered through the Innovation Center's robust stakeholder engagement methods (summarized in the Appendix).

In 2021, additional input was gathered from targeted outreach with more than 150 internal and external stakeholders (see Stakeholder Participation on page 6) and from ongoing engagement through Innovation Center and **Dairy Sustainability Alliance**<sup>®</sup> activities. This engagement included consideration of changes in importance to stakeholders since the initial U.S. dairy materiality assessment in 2019. The review also incorporated input from sources that offer insights into topics of importance to different stakeholder groups, for example:

- Topics commonly reported or publicly communicated among customers (e.g., sustainability reports, website pages, marketplace disclosures and supplier questionnaires) offer direct insights into their sustainability priorities.
- Consumer and market research summarizes perspectives of buyer food preferences and interests in general and relating to dairy specifically. Findings included those from leading research and analysis firms regarding generational trends, consumer interest in environmental topics, and shifts in sentiment pertaining to sustainability and food and/or dairy production.
- Key topics in ESG ratings and rankings schemes provide insights on areas of importance to the investment community.

The review rated importance to stakeholders as high, medium or low. The results will also inform the Innovation Center's ongoing stakeholder engagement, communications and reporting efforts.

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### Influence of U.S. Dairy

Influence is defined as the degree of operational control and/or level of influence that dairy farmers, cooperatives and processors have in managing the topics and associated impacts. The review also considered the activities and impacts of dairy farmers and processors within the dairy value chain and opportunities for driving improvements within and beyond their direct operations, including through industry programs and initiatives. Level of influence was rated as high, medium or low, building on the 2019 materiality assessment values.

The results help identify key levers for change, areas for individual and collective efforts, and opportunities for collaboration.

## Key Findings and Observations

The refresh reinforced the importance of existing prioritized topics, while identifying additional sustainability topics for consideration.

- All 14 material topics from the 2019 assessment were viewed as being equally important or more important to the industry or broader stakeholders, with the following nine being viewed as increasing in importance for both the industry and broader stakeholders (see chart at right):

### Socioeconomic

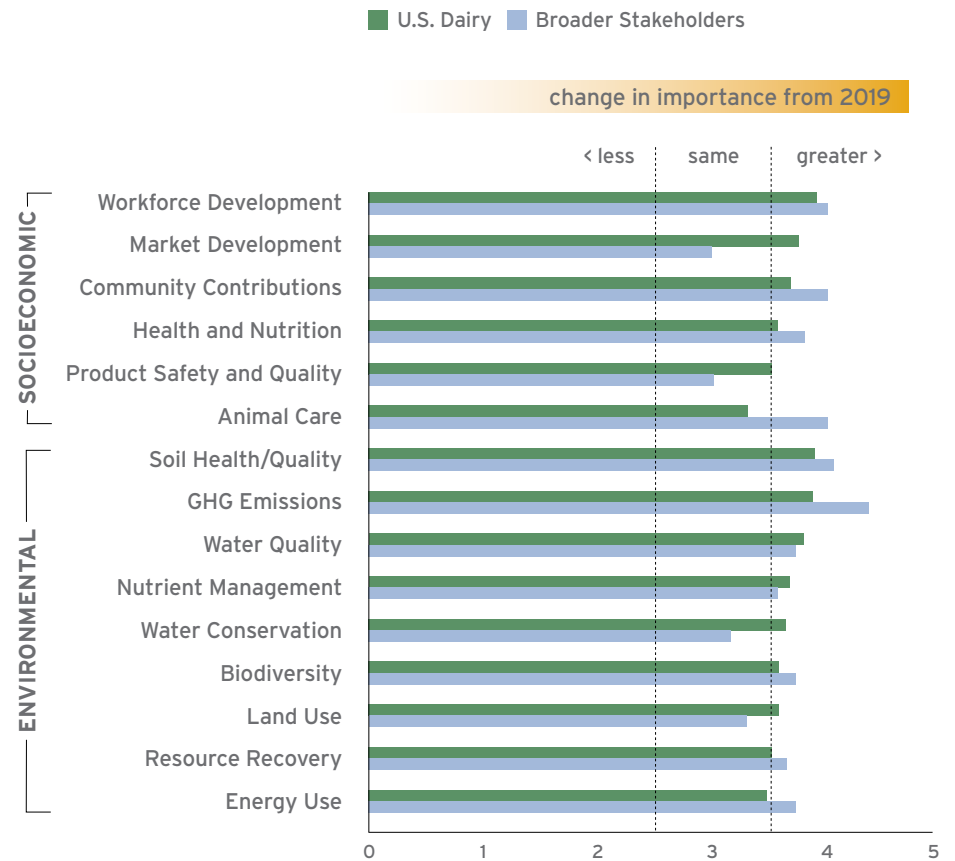
- > Workforce Development
- > Community Contributions
- > Health and Nutrition

### Environmental

- > Soil Health/Quality
- > GHG Emissions
- > Water Quality
- > Nutrient Management
- > Biodiversity
- > Resource Recovery

- The highest ranked topics in the 2019 assessment are industry priorities and were already deemed material; therefore, no further adjustments were needed.
- Workforce Development was separated into two topics:<sup>2</sup>
  - > Worker Health and Safety
  - > Employee Attraction and Retention
- Several topics were added:
  - > Deforestation
  - > Diversity, Equity and Inclusion
  - > Food Security and Accessibility
  - > Economic Contributions
  - > Human Rights
  - > Materials/Packaging
- The added topics and the stakeholder findings align with trends in the external environment, including growing urgency for climate action; increased attention on environmental, social and governance matters; heightened societal expectations; and policy developments. They also are reflected in sustainability reporting and ESG disclosures within and beyond the dairy industry.

## Shifts in Importance of Topics\*



\*Changes in perceived importance of topics from 2019 to 2021 were evaluated through combined findings from 150+ consulted stakeholders. Values are the average ratings across all respondents.

## Summary of Topics Along the Dairy Value Chain

In the analysis of significance of U.S. dairy's impacts and the influence of U.S. dairy, the team leading the assessment considered where impacts occur along the dairy value chain. While the dairy community supports advancements throughout the full value chain, the Innovation Center primarily concentrates on topics at the field, dairy farm and cooperative/processor levels. Some dairy cooperatives and processors might directly manage the milk transportation, packaging and/or distribution stages within their operations. Table 2 highlights where impacts

associated with each topic occur along the steps in the value chain. The open circle (○) designates steps where impacts occur or key segments of the value chain that play a role in a given topic. The solid circle (●) further indicates where U.S. Dairy Stewardship Commitment metrics and/or national programs (as specified in the Appendix) are currently in place. The solid circle does not reflect actions that may be taken at all individual farm, cooperative or processor levels.

**Table 2. Value Chain Overview**

TOPIC		FEED PRODUCTION	MILK PRODUCTION	MILK TRANSPORTATION	PROCESSING	PACKAGING	DISTRIBUTION	RETAIL	CONSUMER
SOCIOECONOMIC	Animal Care		●						
	Community Contributions	○	○	○	●	○	○	○	○
	Diversity, Equity and Inclusion	○	○	○	○	○	○	○	
	Economic Contributions	○	○	○	○	○	○	○	
	Employee Attraction and Retention	○	●	○	●	○	○	○	
	Food/Nutrition Security and Accessibility		○	○	○		○	○	○
	Health and Nutrition				○			○	○
	Human Rights	○	○	○	○	○	○	○	○
	Product Safety and Quality	●	●	○	●	○	○	○	○
	Worker Health and Safety	○	●	○	●	○	○	○	
ENVIRONMENTAL	Biodiversity	●	●						
	Energy Use	●	●	○	●	○	○	○	○
	GHG Emissions	●	●	○	●	○	○	○	○
	Land Use	●	○						
	Materials/Packaging					○			
	Nutrient Management	●	●						
	Resource Recovery	○	○		●	○		○	○
	Soil Health and Quality	●	○						
	Water Conservation	●	●		●	○			
	Water Quality	●	●		●	○			

KEY: ○ Impacts occur at this stage of the value chain, or this key segment plays a role in food/nutrition security. | ● Impacts occur and national programs and/or Stewardship Commitment metrics are in place at this stage. □ Shaded columns represent the field, dairy farm and processor levels covered within Innovation Center national programs. | □ The milk transportation, packaging and distribution stages are covered when they are part of the specific dairy company's operations.

## Validation

Throughout the process, the team coordinated extensive consultations, including review and input on the initial findings of the assessment from a range of stakeholders. Most feedback confirmed the adjustments made. This iterative vetting process included members of the Innovation Center governance bodies, such as the Stewardship Commitment and Environmental Stewardship Committees, as well as individuals from organizations within and beyond the dairy community that are active in Innovation Center stakeholder groups.

## **Final Executive Review**

As the organization's highest governing body, the Innovation Center Board of Directors reviewed the results of the prioritization efforts and provided feedback. The Executive Operating Committee, a subgroup of the Innovation Center Board of Directors, performed initial and subsequent reviews to validate the updated materiality grid and ensure alignment on topics. The 2021 materiality assessment is an important input into the Innovation Center's strategic refresh planning process.

## Application

The Innovation Center will broadly share the 2021 Materiality Assessment for U.S. Dairy with the U.S. dairy community and its stakeholders as a publicly available resource. This iteration of the assessment will continue to inform strategic decisions and help focus attention and resources on what matters most to advance the sustainability of the dairy industry, to meet stakeholder expectations and to increase value creation.

While the Innovation Center for U.S. Dairy's materiality assessment provides a national perspective, it is further intended to inform a participating dairy company's individual assessment. The Innovation Center has prepared updated guidance for conducting an organization-level materiality assessment. The guidance incorporates this national assessment and other Innovation Center resources, while integrating organization-specific considerations and insights. The application of this company guidance is recognized by the SAI Platform's **Sustainable Dairy Partnership** supply chain assurance model as a pathway to meet company-specific materiality requirements within the SDP.

## Ongoing Monitoring

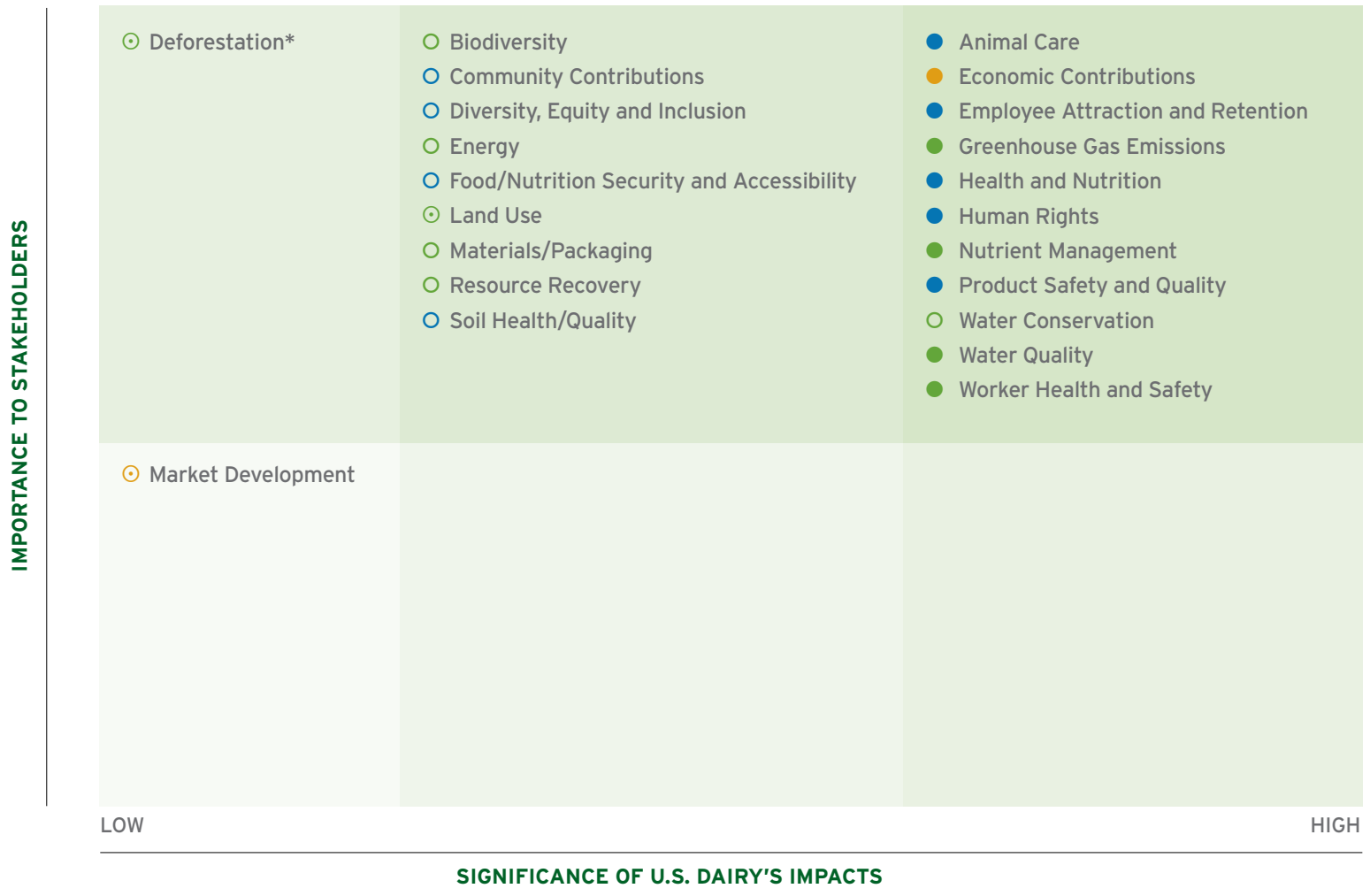
The Innovation Center intends to reassess materiality on a recurring three-year basis and as needed to consider changes relevant to the industry, marketplace and/or consumers; to respond to shifts in stakeholder interests; and to maintain alignment with the latest available science, standards and expert opinions. Future assessments will build on the current prioritized topics and consider further refinements and inclusion of emerging topics.



## 2021 U.S. Dairy Materiality Grid

The following grid categorizes topics based on level of importance to stakeholders, significance of U.S. dairy's impacts, and influence of U.S. dairy, with the highest priorities in the upper right. Topics are in alphabetical order within influence levels.

All topics other than market development and deforestation were deemed material in consideration of strategic initiatives and industry efforts. Refer to the Appendix beginning on page 15 for topic summaries.



Environmental | Social | Economic | Influence of U.S. dairy rated ● high | ○ medium | ⊙ low

Topics within each box are alphabetized.

\*At a national level, deforestation is not seen as materially impacted by U.S. dairy, but it is noted due to importance to stakeholders.



# APPENDIX: TOPICS OVERVIEW

The following pages provide a summary of the identified relevant topics, prioritization considerations and a summary of industry-wide strategies to advance collective action and promote continued improvement.

This summary does not represent all actions undertaken, including those carried out by individual businesses.



## Identified Topics: Environmental

### Biodiversity

Globally, biodiversity has declined at a high rate,<sup>3</sup> and preserving, restoring and enhancing the vast variety of plant and animal species is critical to sustainable development. Biodiversity is interconnected to most of the topics assessed, playing an essential role in environmental stewardship, human health and well-being, food security and economic prosperity. Dairy farms and all agricultural lands offer unique opportunities to protect and enhance biodiversity.

**Prioritization:** There is widespread interest in biodiversity on the global stage and in the opportunities and challenges that food production brings to biodiverse ecosystems. Specific to U.S. dairy, biodiversity remains an emerging priority. The overall comparative position remains in the medium prioritization group, with increased importance noted for broader stakeholders.

- **Importance to Stakeholders: Medium-High** - Interest in efforts to protect and promote biodiversity has risen, with increased attention on nature-based solutions and the inclusion of biodiversity in sustainable sourcing strategies.
- **Significance of U.S. Dairy's Impacts: Medium** - Numerous activities along the dairy value chain have the potential to impact biodiversity in either positive or negative ways, such as the use of pesticides, water quality of effluents, and nutrient management. Biodiversity losses - for example, reduction of species needed for pollination of cropland or of beneficial microbes to maintain soil health - have direct operational and financial impacts on dairy production, while practices to enhance biodiversity on dairy farms can help mitigate these risks and provide broader societal benefit. There are also strong interconnections between biodiversity and many of the other environmental topics.
- **Influence of U.S. Dairy: Medium** - Biodiversity is most relevant to crop production. On average, 65% of dairy feed grown is purchased off-farm,<sup>4</sup> where farmers have limited operational control over field-specific sustainability practices. However, farmers have a high degree of control over the feed they grow directly, and land used for dairy feed can support native species and help biodiversity thrive.

**STRATEGY:** In 2020, the Innovation Center's Environmental Stewardship Committee created a Biodiversity Task Force of dairy farmers, cooperatives, processors and advisers to support advancements in understanding, measuring and improving dairy's impacts on biodiversity. The task force proposed two new metrics regarding application of plans, programs and practices with biodiversity benefit. These metrics underwent public stakeholder review, were approved by the Innovation Center Executive Operating Committee and were integrated as optional **U.S. Dairy Stewardship Commitment** metrics in November 2021. Further, guidance materials were developed to help dairy farmers understand practices that promote biodiversity and the benefits they provide. These efforts will inform the potential for metric refinements and the possibility of an industry goal in the coming years.

The Innovation Center also has a collaborative partnership with **Field to Market: The Alliance for Sustainable Agriculture**, which provides tools and information to individual growers, both dairy farmers and others, to assess feed crop sustainability, including biodiversity.



## Energy Use

Environmental and economic impacts in energy use vary based on factors such as allocations of renewable energy versus fossil fuels. Regardless, reductions in energy use directly correlate to lowered costs of production. As such, energy efficiency often serves as an entry point to advance sustainable practices and provides one of the easiest wins to quantify return on investment. Efforts concentrate on both conserving energy and supporting the transition to a clean energy economy through low- or zero-emissions sources.

**Prioritization:** An increase in importance was noted for broader dairy stakeholders and due to the connection of energy use with GHG emissions. The overall comparative position remains in the medium prioritization group.

- **Importance to Stakeholders: Medium** - Many dairy customers expect their suppliers to optimize energy usage and reduce operating costs throughout the value chain, including on-farm, processing and transportation. Supplier reporting expectations may also include energy sources and the shift from fossil fuel-based energy to renewable energy.
- **Significance of U.S. Dairy's Impacts: Medium** - Energy consumption directly affects a farm or dairy processor's bottom line. Further, based on U.S. dairy life cycle assessment (LCA) findings, approximately 36.6% of GHG emissions for fluid milk come from energy use across the dairy value chain.<sup>5</sup> Because GHG emissions are a top environmental priority for dairy (page 11), reductions in energy use and transitions to low- and zero-carbon sources are needed to reduce dairy's footprint to achieve the GHG neutrality goal within U.S. dairy's Environmental Stewardship Goals, as well as to enhance consumer trust and meet stakeholder expectations. However, the ongoing greening of the electrical grid and innovations in energy technology influenced the medium rating, as these contributions have a vastly greater impact than actions by U.S. dairy.
- **Influence of U.S. Dairy: Medium** - Dairy farmers and processors have a high degree of influence through investing in energy efficient equipment, advancing energy conservation practices and investing in on-site or purchased renewable energy. However, the economic viability of improvement initiatives and new technologies must be considered, as adoption of cost-prohibitive options may not be possible.

**STRATEGY:** The industry has invested in research, guidance materials, metrics, and evaluation and reporting tools to enable dairy producers and processors to benchmark performance and work toward continuous improvement in energy consumption and the reduction of associated GHG emissions. The **FARM Environmental Stewardship** (FARM ES) evaluation tool tracks a farm's energy efficiency footprint as aligned with the **U.S. Dairy Stewardship Commitment** energy intensity metric. Additionally, the Innovation Center supports facilitation and processor engagement in the development of the dairy processor-funded Processor Stewardship Reporting Tool (PSRT) that enables aggregate reporting for a processor energy intensity metric, which is then published annually through the U.S. Dairy Sustainability Report. Use of FARM ES by dairy cooperatives or a time-bound plan to do so, as well as processor reporting via the PSRT, are Stewardship Commitment terms of adoption. Refer also to the strategies for greenhouse gas emissions on page 18.



## Greenhouse Gas (GHG) Emissions

The importance of climate action has only intensified since the initial U.S. dairy assessment in 2019. Concern over climate change makes reducing GHG emissions a global priority, and the agricultural sector can play an important role in efforts to reduce emissions while delivering multiple nature-based solutions.

**Prioritization:** This topic remains among the most pressing areas of environmental sustainability, as demonstrated by the U.S. dairy industry-wide goal to achieve GHG neutrality by 2050.<sup>6</sup> The overall comparative position remains in the highest prioritization group, with an increase in importance/interest noted for both the dairy community and broader stakeholders.

- **Importance to Stakeholders: High** - Climate change is an utmost global priority due to current and projected environmental, societal and economic impacts, as underscored in the **UN Sustainable Development Goals** (SDGs), the Paris Climate Agreement and legally binding country reduction goals. Input from dairy stakeholders affirms increased importance in an already highly rated topic. Many of the world's leading multinational dairy buyers have set science-based targets, which often accompany public commitments to dramatically reduce GHG emissions - including net zero emissions - across their supply chains.<sup>7</sup> Retailers and brands ask suppliers to provide quantifiable information on how they are working to reduce their carbon footprint.
- **Significance of U.S. Dairy's Impacts: High** - The **Intergovernmental Panel on Climate Change** (IPCC), the United Nations body for assessing the science related to climate change, makes it clear that climate change is widespread and intensifying, which can have a broad impact on dairy production systems and the natural ecosystems that surround them. Stabilizing global temperatures will require large-scale reductions in greenhouse gas emissions. U.S. dairy LCA findings indicate that U.S. dairy accounts for 2% of total U.S. greenhouse gas emissions,<sup>8</sup> establishing the high level of significance. In addition, there are consumer trust and reputational implications for dairy that necessitate action.
- **Influence of U.S. Dairy: High** - All steps of the dairy value chain produce GHG emissions; therefore, dairy farms, cooperatives and processors have a high degree of influence to support reductions.

**STRATEGY:** As GHG emissions are an utmost priority, the industry has invested heavily in research, guidance materials, metrics and goals, education, reporting software and evaluation tools to enable dairy producers and processors to benchmark performance, identify solutions and work toward continuous improvement.

In 2020, the U.S. dairy industry established the 2050 Environmental Stewardship Goals to achieve GHG neutrality, optimize water usage and improve water quality by optimizing utilization of manure and nutrients. The goals focus on the most pressing areas of environmental sustainability and are consistent with the materiality assessment findings and top priorities within the **U.S. Dairy Stewardship Commitment**. These national goals encompass the field, dairy farm and processing stages of the supply chain collectively and are also a priority of the Innovation Center's Environmental Stewardship Committee.

U.S. dairy is pursuing two overarching strategies to achieve the 2050 Environmental Stewardship Goals:

- The **U.S. Dairy Net Zero Initiative** is an industry-wide collaboration to accelerate voluntary adoption of sustainability practices and technologies on-farm by closing knowledge gaps, improving economic viability and increasing accessibility.
- The Processor Working Group, led by the Innovation Center, brings together over 25 processing organizations that convene regularly to support objectives of the **U.S. Dairy Stewardship Commitment** and Environmental Stewardship Goals, including engagement in facility-focused workstreams for GHG emissions, water, packaging and waste to drive action and demonstrate progress.

The **U.S. Dairy Stewardship Commitment** and **resources** such as GHG inventory and accounting guidance for dairy companies, along with programs such as **FARM Environmental Stewardship** (FARM ES) and the Processor Stewardship Reporting Tool (PSRT), work together to promote measurement, communication and improvement opportunities for dairy farms, cooperatives and processors. Cooperative utilization of FARM ES, or a plan in place to do so, and processor reporting via the PSRT are Stewardship Commitment terms of adoption.

## Land Use

Land is one of the most important resources in the food and agriculture sector. The term “land use” refers to land transformation - changing from one type of use to another, such as from a forest to a field - and to land occupation. Land uses and associated management practices affect environmental and socioeconomic impacts, reinforcing the strong interconnection among sustainability topics.

**Prioritization:** Responsible land use and the reduction of natural resources needed to produce the same amount of milk connect directly to increased efficiencies and reduced environmental impacts. Increased importance of land use was noted by U.S. dairy, and the overall comparative position remains in the medium prioritization group.

- **Importance to Stakeholders: Medium** - Land use is a global issue of concern for stakeholders, with particular attention on deforestation.
- **Significance of U.S. Dairy's Impacts: Medium** - Due to productivity improvements, U.S. dairy used 65% less cropland to produce a gallon of milk in 2007 than it did in 1944.<sup>9</sup> Further, dairy production systems in 2017 used 20.8% less land than in 2007 to produce an equivalent quantity of milk.<sup>10</sup> Although land occupation impacts remain, current agriculture in the U.S. is not causing a net loss of U.S. forest lands. In fact, there was an average annual net gain of 0.03% in forested areas in the U.S. between 2010 and 2020.<sup>11</sup> For this reason and because feed for U.S. dairy is grown within the U.S., the related subtopic of deforestation, an important issue in other regions, was deemed not material in this national assessment (page 33).
- **Influence of U.S. Dairy: Medium** - While land is occupied throughout milk's entire value chain, 96% of land occupation occurs during the production of crops for dairy feed.<sup>12</sup> Increased efficiency in crop yields and feed optimization brings economic value to the farm while decreasing the amount of land needed for dairy production.

**STRATEGY:** The strategies to achieve the 2050 Environmental Stewardship Goals, particularly through the **U.S. Dairy Net Zero Initiative** (NZI), support the promotion of responsible land use practices through related impact areas (page 18). For instance, the NZI Field in Focus project works to create a scalable model for promoting and tracking the adoption and impact of field and feed practices that reduce GHG emissions and/or sequester carbon. The Innovation Center also partners with **Field to Market: The Alliance for Sustainable Agriculture** and is exploring opportunities to collaborate with Field to Market on feed sustainability both on and off the dairy farm.

## Materials/Packaging

Sustainable use of materials, including packaging, is a key area with interconnections to other topics, including food safety and resource recovery. This topic was added based on the recognition of its importance within the dairy industry, research developments and growing interest from customers and consumers.

**Prioritization:** Materials in general, including packaging, are a well-recognized sustainability topic and increasingly under focus through the lenses of circularity, waste reduction and reduced plastic use. As a reflection of heightened attention on the impacts of packaging across its life cycle, this is a newly added topic. The overall comparative position is in the medium prioritization group.

- **Importance to Stakeholders: Medium-High** - Customers and supply chain partners place a moderate level of emphasis on waste management. The subtopics of packaging and plastic use are of particular interest to stakeholders, including governmental agencies, nonprofits, retail and foodservice customers, and consumers.
- **Significance of U.S. Dairy's Impacts: Medium** - Dairy products require packaging materials, and packaging has impacts downstream, contributing to waste streams. Increased interest in sustainable packaging brings cost implications, current and potential regulatory factors, and issues regarding availability and acceptability of alternative packaging products and materials.
- **Influence of U.S. Dairy: Low-Medium** - Packaging and supply decisions are based on many factors, including food safety and quality, cost considerations, availability of options, and customer and consumer requirements. The level of influence on downstream actions and impacts is limited. For example, recycling rates are affected by both business and consumer practices and local programs and infrastructure.

**STRATEGY:** This is a newly added topic to the assessment; therefore, the strategy at an industry level is evolving. The Processor Working Group, facilitated through the Innovation Center, formed a Packaging Team to better understand the current dairy packaging landscape, identify packaging opportunities and help inform strategy. From a full life cycle perspective, efforts in this area connect with Resource Recovery, Food Safety and GHG Emissions.

## Nutrient Management (Field and Dairy Farm)

Fertilizer, manure and compost are used to enrich the soil in which crops are grown. The proper nutrients should be applied at the right rate, time and location to achieve optimal forage and crop productivity and to minimize adverse environmental impacts on water and ecosystems.

**Prioritization:** The overall comparative position remains in the highest prioritization group, with increased importance noted for industry and broader stakeholders alike. The role of responsible nutrient management is underscored in the 2050 Environmental Stewardship Goal for water quality by optimizing utilization of manure and nutrients.

- **Importance to Stakeholders: High** – Appropriate management of nutrients and manure application are strongly connected to managing environmental priorities, including water quality, soil health, biodiversity and GHG emissions. As such, customers and supply chain partners place a great level of emphasis on nutrient stewardship.
- **Significance of U.S. Dairy's Impacts: High** – Good manure application and nutrient management techniques help optimize crop yields and deliver economic as well as environmental benefits. For example, life cycle assessment data shows that the application of manure to cropland increases the water-holding capacity of soil by 20%, so less groundwater is needed to grow crops.<sup>13</sup> Manure is also a source of methane, a potent greenhouse gas. Based on storage and application practices utilized, manure has potential impacts on water quality, air quality, soil health and biodiversity. While regulations vary by state and region, federal law requires that all farmers with more than 700 cows have a Comprehensive Nutrient Management Plan (CNMP) in place. This strong legal oversight reinforces the importance of this topic.
- **Influence of U.S. Dairy: Medium-High** – Nutrient management is related to crop production. Approximately 35% of U.S. dairy feed is produced by dairy farmers, with the remaining 65% purchased from sources off the dairy farm.<sup>14</sup> Dairy farmers have limited operational control over field-specific sustainability practices for the feed grown off-farm, but a high degree of control over manure management practices.

**STRATEGY:** The industry has invested heavily in research, metrics and evaluation tools that address this priority. Nutrient management further is addressed within the 2050 Environmental Stewardship Goals (refer to the strategies to support the achievement of the goals described under Greenhouse Gas Emissions on page 18), particularly through the U.S. Dairy Net Zero Initiative (NZI). The **FARM Environmental Stewardship** (FARM ES) evaluation tool tracks the implementation and maintenance of written nutrient management plans as aligned with the **U.S. Dairy Stewardship Commitment** nutrient management metric, and use of FARM ES or a time-bound plan to do so is a Stewardship Commitment term of adoption for dairy cooperatives.

The Innovation Center also addresses this topic through key partnerships so that it can extend its influence over a broader range of feed producers. For instance, the Innovation Center partners with **Field to Market: The Alliance for Sustainable Agriculture** and is further exploring opportunities to collaborate with Field to Market to address feed grown both on- and off-farm.



## Resource Recovery

The Innovation Center approaches waste from the angle of resource recovery. Resource recovery is the selective extraction of disposed-of materials (waste) for a specific next use, such as production of new materials, compost or energy. The aim of resource recovery is to extract the maximum practical benefits from products, delay the consumption of virgin natural resources and generate the minimum amount of waste. Additionally, dairy processing plants can implement waste management plans, which help reduce waste before it is ever created (avoided waste). Resource recovery may also be extended from processing to the dairy farm through opportunities such as using byproducts from food processing as animal feed and sending organic food waste to on-farm anaerobic digesters. Many processors have high landfill diversion rates.

**Prioritization:** There has been heightened attention on circularity and zero waste initiatives, with increased importance noted for industry and broader stakeholders alike. The overall comparative position remains in the medium prioritization group.

- **Importance to Stakeholders: Medium-High** - Customers and supply chain partners place a moderate level of emphasis on waste management. The subtopic of food waste is of particular interest to internal and external stakeholders, including governmental agencies, nonprofits, retail and foodservice customers, and consumers.
- **Significance of U.S. Dairy's Impacts: Medium** - Through waste minimization and opportunities for resource recovery such as use of edible byproducts (e.g., almond hulls or orange peels) for dairy feed, value-added manure-based products, and utilization of recyclable packaging materials, U.S. dairy can advance a circular economy while obtaining new sources of revenue and cost savings through improved efficiencies.
- **Influence of U.S. Dairy: Medium** - Within their direct operational boundaries, dairy farms, cooperatives and processors have a high level of control in managing inputs to reduce the consumption of virgin natural resources and generate the least amount of waste. Influence on the waste downstream, particularly related to food waste and packaging waste, is limited. The majority of food waste occurs at the retail and consumer levels.

**STRATEGY:** The Innovation Center addresses resource recovery through research and the development of metrics, guidance and reporting tools to enable tracking, communicating and improving performance. The Processor Working Group also formed a Waste Team as a collaborative forum through which dairy processors can share best practices and identify new waste reduction opportunities. For dairy processors, resource recovery is measured through a comprehensive suite of **U.S. Dairy Stewardship Commitment** processor metrics and the dairy processor-funded Processor Stewardship Reporting Tool (PSRT) that enables aggregate reporting for these metrics, which are then published annually through the U.S. Dairy Sustainability Report. Processor reporting via the PSRT is a Stewardship Commitment term of adoption. Further, in-depth resources and guidance pertaining to resource recovery are outlined in the **Dairy Processor Handbook**. In 2017, the Innovation Center joined forces with 10 other industry stakeholders – NGOs, investors, government entities and businesses – to launch **Further with Food**, an online hub to exchange information and solutions to help the U.S. cut food waste.



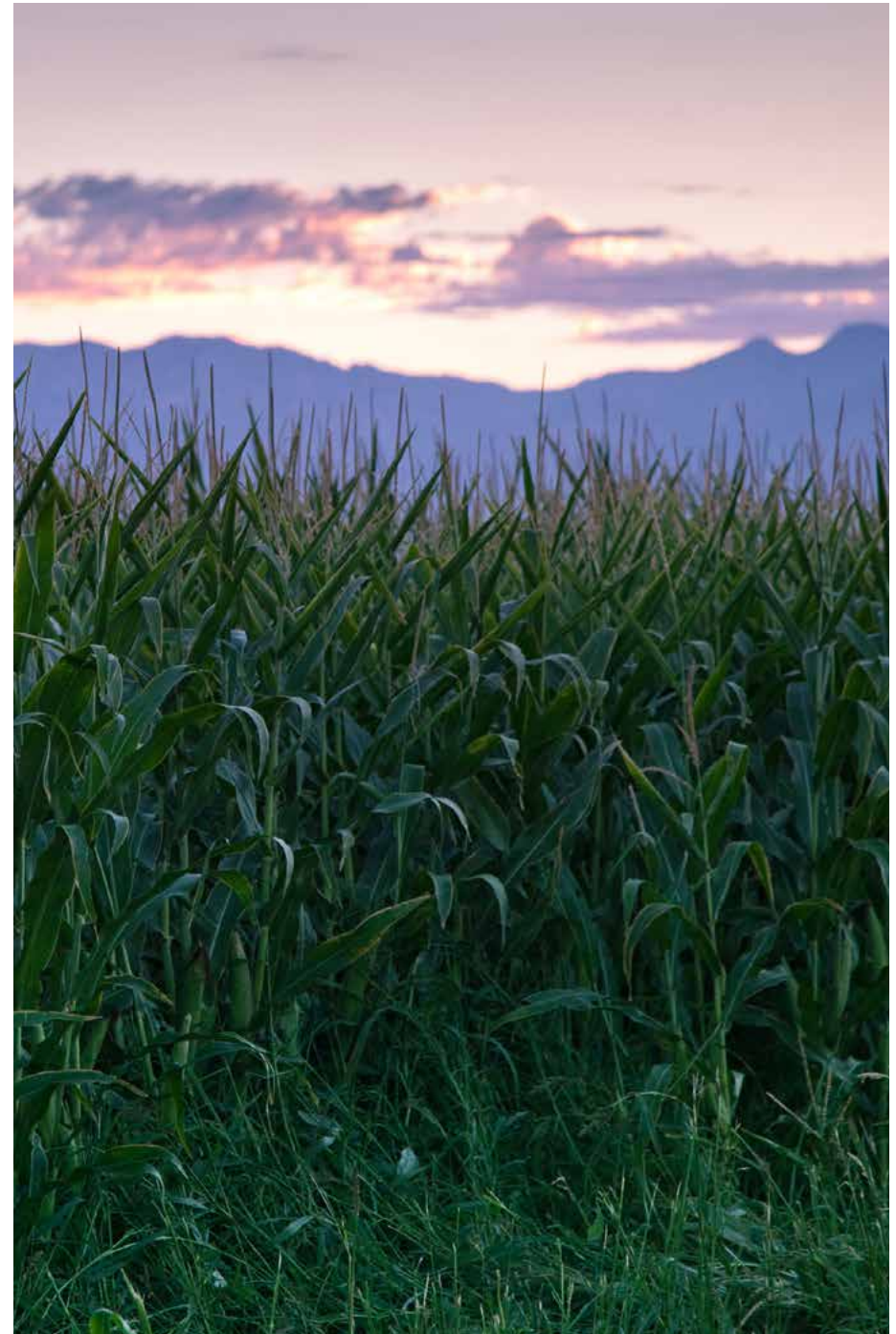
## Soil Health/Quality

Promoting soil quality delivers multiple interconnected benefits on and beyond the farm. Healthy soil increases crop productivity, improves soil retention and reduces water use while storing carbon. Impacts on soil health are affected by direct management practices and include associated impacts related to water quality and nutrient/manure management. Agricultural and other land use practices that increase the amount of carbon the soil can hold represent an important and cost-effective pathway to mitigate climate change.

**Prioritization:** Soil health has increased in importance since 2019 for both dairy and broader stakeholders. The overall comparative position remains in the medium prioritization group.

- **Importance to Stakeholders: Medium** - Soil health/quality was among the highly rated topics in terms of increasing in importance since 2019 for both dairy and broader stakeholders (page 11). Attention on nature-based solutions and the role of soil health in carbon sequestration continues to rise.
- **Significance of U.S. Dairy's Impacts: Medium-High** - The significance of the impacts of soil health is tied to its role in supporting biodiversity and climate change mitigation. Soil health directly impacts crop yields and economic returns. Optimization of practices to enhance soil health also brings financial benefit through reduced crop input costs.
- **Influence of U.S. Dairy: Medium** - Appropriate application of manure can have a significant positive impact on enhancing healthy soils. As noted in other topics, the level of control over field-specific sustainability practices varies based on the amount of crop production dairy farmers manage. Considerations are similar to those for nutrient and manure management.

**STRATEGY:** The strategies to achieve the 2050 Environmental Stewardship Goals, particularly through the U.S. Dairy Net Zero Initiative, support the promotion of soil health and carbon sequestration (page 18). For instance, the Dairy Soil & Water Regeneration project is conducting soil health sampling to create a database of soil carbon stocks and other soil health metrics under different management systems to allow for evaluation/assessment of the soil health opportunities across dairy regions. Further, soil health is closely connected to nutrient and manure management (page 20). In addition, the Innovation Center partners with **Field to Market: The Alliance for Sustainable Agriculture** and explores collaboration opportunities with Field to Market to find ways to promote soil health in connection to feed grown both on- and off-farm.





## Water Conservation

Water is a local issue, characterized by both water supply and watershed characteristics. The dairy community manages water as a shared essential natural resource.

**Prioritization:** Conserving water resources is among the most pressing areas of environmental sustainability, underscored by the 2050 Environmental Stewardship Goals and the increased importance noted by the industry. The overall comparative position remains in the highest prioritization group.

- **Importance to Stakeholders: High** - Water scarcity is a long-standing global concern with heightened interest and attention due to increased human consumption and changes in climate. Customers and supply chain partners place a great level of emphasis on water stewardship, including water conservation, and many have set goals within the scope of their own operations to reduce water consumption.
- **Significance of U.S. Dairy's Impacts: High** - Dairy farmers understand the impact of water resources because their prosperity is directly tied to water access, scarcity and excess. LCA research finds that approximately 5.1% of total U.S. water withdrawal is from dairy-related water use.<sup>15</sup> A sustainable water supply is essential throughout the industry to maintain viable business operations.
- **Influence of U.S. Dairy: Medium** - Over 90% of water use in the U.S. dairy value chain occurs during feed production.<sup>16</sup> Approximately 35% of U.S. dairy feed is produced by dairy farmers, with the remaining 65% purchased off-farm.<sup>17</sup> Dairy farmers have limited operational control over field-specific sustainability practices for feed grown off-farm, but a high degree of control over the feed they grow directly.

**STRATEGY:** As an intensity measure, water consumption in dairy has continued to decline due to factors such as increased crop productivity and the improved overall efficiency of dairy production. In fact, research shows a 30% decrease in on-farm water consumption from 2007 to 2017 alone.<sup>18</sup> U.S. dairy continues to explore strategies to support the 2050 Environmental Stewardship Goal for optimization of water use through practices such as water recycling and continued improvements to on-farm and processor water reuse and efficiency. Refer to the strategies to support the achievement of the goals described under Greenhouse Gas Emissions on page 18.

The Innovation Center also addresses this topic on dairy farms through **U.S. Dairy Stewardship Commitment** metrics on water conservation, the Processor Stewardship Report Tool (PSRT) and key partnerships so that it can extend its influence to a broader range of feed producers. Processor reporting via the PSRT is a Stewardship Commitment term of adoption. The Innovation Center partners with **Field to Market: The Alliance for Sustainable Agriculture** and is further exploring opportunities to collaborate with Field to Market to address feed grown both on- and off-farm. Further, the Processor Working Group, facilitated by the Innovation Center, brings together over 25 processing organizations that convene regularly and engage in facility-focused workstreams, including water, to drive action and demonstrate progress.



## Water Quality

Clean and accessible water is a foundational global priority, with implications for both human and ecosystem health. Maintaining high standards for water quality and continued improvement benefits both agricultural lands and dairy processing facilities, as well as natural ecosystems and surrounding communities.

**Prioritization:** Water quality is among the most pressing areas of environmental sustainability, underscored by the 2050 Environmental Stewardship Goals and the increased importance noted by the industry and broader stakeholders alike. The overall comparative position remains in the highest prioritization group.

- **Importance to Stakeholders: High** - Customers, supply chain partners, regulators and other stakeholders place a great level of emphasis on water stewardship, including water quality. Retailers and brands ask suppliers to provide information on how they are working to improve water quality through proper wastewater management, nutrient and manure management, soil health practices and other measures. At both the farm and processor levels strong regulatory oversight reinforces the importance of this topic.
- **Significance of U.S. Dairy's Impacts: High** - Impacts on water quality occur at both the dairy farm and processing levels. Properly managed water quality practices are essential to meet and maintain regulatory requirements, demonstrate an ongoing commitment to environmental stewardship and industry goals, and avoid reputational risk for the dairy category.
- **Influence of U.S. Dairy: High** - Dairy farms have direct operational control over manure and nutrient management, which can affect water quality (see Nutrient Management on page 20). Dairy processors have the responsibility to utilize policy, program or monitoring systems that ensure routine compliance with industrial or storm water permit parameters.

**STRATEGY:** Given the high importance of water stewardship to both stakeholders and the industry, two of the three industry 2050 Environmental Stewardship Goals - optimization of water usage and improved water quality - are water focused. Supporting initiatives include the **U.S. Dairy Net Zero Initiative** (NZI), which was launched in 2020 as an industry-wide effort to accelerate voluntary action on-farm to reduce environmental impacts by making sustainable practices and technologies - such as those focused on water quality - more accessible and affordable to U.S. dairy farms of all sizes and geographies. The Processor Working Group, led by the Innovation Center, brings together over 25 processing organizations that convene regularly and engage in facility-focused workstreams, including water, to drive action and demonstrate progress.

The Innovation Center also addresses this topic through **U.S. Dairy Stewardship Commitment** metrics. On dairy farms, these are tracked, implemented and maintained through written nutrient management plans - with associated water quality benefits - using the **FARM Environmental Stewardship** (FARM ES) evaluation tool. For dairy processors, water quality is measured through the dairy processor-funded Processor Stewardship Reporting Tool (PSRT) that enables aggregate reporting for this metric. Use of FARM ES by dairy cooperatives, or a plan in place to do so, and processor reporting via the PSRT are Stewardship Commitment terms of adoption. The Innovation Center also partners with **Field to Market: The Alliance for Sustainable Agriculture** and is further exploring opportunities to collaborate to address feed grown both on- and off-farm.



## Identified Topics: Socioeconomic

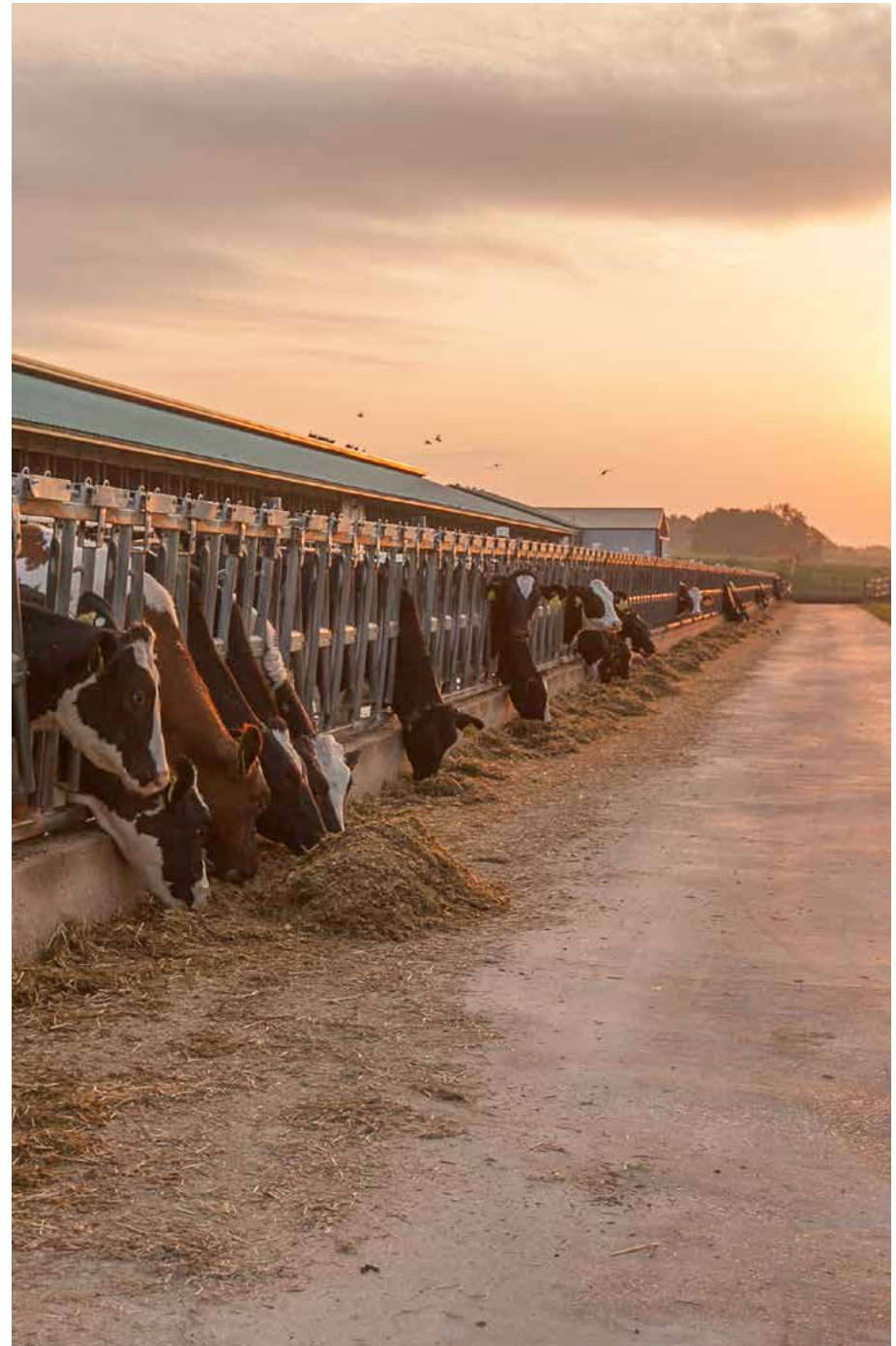
### Animal Care (Dairy Farm)

U.S. dairy farmers are committed to ensuring the well-being of animals in their care. Striving to meet the highest standards and making sound decisions for animal care are not only ethical obligations but also essential for a productive herd and critical to the farm's profitability and success.

**Prioritization:** Animal care has always been a priority for U.S. dairy, with an increase in importance/interest noted by broader shareholders. The overall comparative position of this topic remains in the highest prioritization group.

- **Importance to Stakeholders: High** - Dairy customers and consumers place a high value on ethical animal care, with an increase in importance/interest noted for dairy stakeholders. Uniting around the highest standards and making sound decisions are not only ethical obligations for dairy farmers but also essential for a productive herd and critical to the farm's profitability and success.
- **Significance of U.S. Dairy's Impacts: High** - Quality animal care is an utmost social responsibility priority for U.S. dairy. The impact of management practices surrounding animal care includes productivity, profitability, values and trust in the dairy category.
- **Influence of U.S. Dairy: High** - Dairy farmers have direct operational control over maintaining the health and well-being of their animals. Dairy processors can exert positive influence on practices within their milk supply.

**STRATEGY:** The U.S. dairy industry has developed a globally aligned and leading animal care program to establish guidelines and standards for cow care and to create a culture of continuous improvement. Updated every three years and grounded in continuous improvement, the **FARM Animal Care Program** establishes welfare management guidelines, which are verified by both second- and third-party evaluators. Second-party evaluations are completed by trained individuals on every participating dairy at least once every three years, while third-party evaluations occur on a random, statistically significant sample of farms annually. While the program is voluntary, it is a recognized part of doing business and therefore adopted by 99% of U.S. milk production. In the **U.S. Dairy Stewardship Commitment**, animal care is measured by participation in the FARM Animal Care program, and enrollment and good standing in FARM Animal Care (for dairy cooperatives) and/or sourcing from 100% FARM enrolled farms (for dairy processors) are Stewardship Commitment terms of adoption.



## Community Contributions

The Community Contributions topic covers both the direct and indirect economic impacts of the dairy industry (see Economic Contributions on page 28) along with philanthropic and product contribution activities. Dairy companies and their employees contribute to local communities and regions (both urban and rural) in ways that can be visible to consumers and stakeholders, such as direct economic support, local taxes paid and employment opportunities. Other impacts may be less obvious, including involvement by employers and volunteering by employees in service organizations, religious organizations and schools; charitable and general contributions; and capacity building to support the overall vitality of rural and urban communities.

**Prioritization:** This topic has increased in importance since 2019 for both dairy and broader stakeholders. The overall comparative position remains in the medium prioritization group.

- **Importance to Stakeholders: Medium** - Stakeholders are interested in learning about the dairy community's contributions to the communities where they live and work, although to a lesser degree compared to many other topics. This topic is often of higher importance to employees.
- **Significance of U.S. Dairy's Impacts: Medium** - The contributions made by the dairy workforce and through the farms and companies where they work support thriving local communities and bolster the reputation of the dairy category. Dairy farms and processors contribute to local communities by creating jobs, purchasing services and supplies, and paying local taxes. Through a demonstration of longstanding values, they often engage in outreach efforts such as community volunteering, product donations and charitable giving. The impact of philanthropic activities across the U.S. dairy industry has not been measured. However, the size of the industry and its presence in every state, along with the efforts communicated by individual companies and by associations and other state and national dairy organizations, provide evidence of significance. These support activities, which are important demonstrations of social responsibility, help address a range of community needs, particularly in rural areas, and can bolster goodwill and support company success. At the same time, they do not necessarily address the impacts associated with dairy companies' core business activities and operations, resulting in a lower assessment on the significance of impacts compared to other priorities. See also Food/Nutrition Security and Accessibility on page 29, a targeted area of community support for the dairy community.
- **Influence of U.S. Dairy: Medium** - The dairy community is dedicated to increasing its positive contribution in local and rural communities.

**STRATEGY:** Dairy farms, cooperatives and processors, along with their employees and families, actively contribute to their local communities through volunteering, sponsorship of local events, charitable giving and product donations.

The industry supports individual actions through the development of guidance materials and metrics to track and communicate dairy company efforts. For example, the **U.S. Dairy Stewardship Commitment** requires adopting companies to report on at least one community contribution metric. Furthermore, supporting food security and nutrition has long been a shared commitment and an area of collective action for the dairy community, such as through **Dairy Nourishes America**, which includes guidance on distribution models dairy processors can use to feed hungry people. This led to Food/Nutrition Security and Accessibility also being assessed as a stand-alone topic (see page 29).



## Diversity, Equity and Inclusion

The benefits of diversity, equity and inclusion (DE&I) in the workplace and in leadership are well established.<sup>19</sup> This multidimensional, cross-cutting topic aligns with heightened attention on building a more equitable and inclusive economy and workplace. The 2017 Census of Agriculture Race/Ethnicity/Gender Profile shows diversity in employees along with opportunities to promote greater diversity in dairy farm ownership.<sup>20</sup> Similar opportunities exist in promoting diversity at all levels within dairy processing companies.

**Prioritization:** This topic was added based on the increased attention and recognition of importance for sustainable development. The overall comparative position is in the medium prioritization group.

- **Importance to Stakeholders: High** - Interest in this area from investors to employees and consumers has steadily risen. Events in 2020 galvanized social and racial justice movements, prompting many companies to reevaluate and strengthen their DE&I practices and organizational cultures. The expectation for increased disclosure related to these topics, especially from institutional investors, continues to grow.
- **Significance of U.S. Dairy's Impacts: Medium** - As a large collective employer and purchaser, the dairy community can positively impact the promotion of diversity, equity and inclusion. The business case for DE&I is robust, and initiatives can bolster financial success for the dairy industry. For instance, a 2019 report by McKenzie & Company found that companies in the top quartile for gender diversity on executive teams were 25% more likely to have above-average profitability than companies in the fourth quartile, and, in the case of ethnic and cultural diversity, top-quartile companies outperformed those in the bottom quartile by 36% in profitability.<sup>21</sup>
- **Influence of U.S. Dairy: Medium** - Dairy farmers, cooperatives and processors have control over their own employment and sourcing practices, while industry-wide initiatives can play a valuable role in promoting DE&I overall. However, externalities such as availability of rural labor, or limits to ethnic or cultural diversity of available labor, can limit dairy's influence on this topic.

**STRATEGY:** While this is a newly added topic to the assessment, many dairy company-specific policies and initiatives that address DE&I currently exist, and practices related to equal opportunity and nondiscrimination are highly regulated through both state and federal laws, thus providing a strong foundation. For example, the Civil Rights Act of 1964 prohibits discrimination based on certain characteristics/protected categories like race, sex, religion, disability, national origin and more. States and localities may adopt their own requirements that exceed federal law.

While many efforts occur at a business level, there are broader initiatives across the food, agriculture and manufacturing sectors, including dairy. For example, the **International Dairy Foods Association (IDFA) People Strategy**, launched in 2020, includes Diversity, Equity and Inclusion as a key component to offer knowledge and resources to promote development across the dairy industry and to provide opportunities for professional growth alongside an evolving workforce.



## Economic Contributions

The U.S. dairy industry contributes significant direct and indirect economic value at the local, state and national levels by supporting millions of jobs and billions of dollars in wages, creating an overall economic impact of more than 3% of the U.S. gross domestic product (GDP).<sup>22</sup> Further, much of the milk production and dairy product manufacturing occurs in rural communities, contributing significant direct and indirect economic benefits in non-urban areas.

**Prioritization:** This topic was added in recognition of U.S. dairy's important direct and indirect economic contributions. The topic also connects with equitable livelihoods and support for rural communities. The overall comparative position is in the highest prioritization group.

- **Importance to Stakeholders: High** - Stakeholders are interested in the economic contributions of the dairy industry and their connections to employment opportunities and wages for millions of workers.
- **Significance of U.S. Dairy's Impacts: High** - Dairy production occurs in all 50 states, and nationally, dairy is the third-largest agricultural commodity in terms of cash receipts.<sup>23</sup> Income earned through dairy translates to investment in both rural and urban communities, further contributing to the U.S. economy.
- **Influence of U.S. Dairy: Medium** - Dairy farms, cooperatives and processors manage their financials, but many external factors also affect overall economic impacts.

**STRATEGY:** Economic considerations are integrated across strategic initiatives, with the overall aim to continue to strengthen the direct and indirect economic impacts of U.S. dairy through economically viable businesses and continued growth in consumer trust and sales.

## Employee Attraction and Retention

The success of the dairy industry depends upon the availability and retention of skilled employees. This topic includes working conditions as well as human capital management practices to attract, engage and retain employees.

**Prioritization:** This topic was elevated from a subtopic under Workforce Development in the 2019 assessment to a stand-alone topic due to its strategic importance along with increased industry attention and a high level of stakeholder interest. The overall comparative position is in the highest prioritization group.

- **Importance to Stakeholders: High** - Labor management is closely watched by external stakeholders, and the ongoing investment needed to advance a skilled workforce is a high priority for all engaged stakeholders.
- **Significance of U.S. Dairy's Impacts: High** - The attraction, retention and development of skilled employees is foundational to the success of the industry and sets the course for an economically viable and socially responsible dairy community. In the U.S., the dairy industry directly employs more than 1 million individuals and indirectly supports millions more.<sup>24</sup> Impact to dairy is also high due to the challenges and potential risks associated with the availability of labor in rural or less-developed areas.
- **Influence of U.S. Dairy: Medium-High** - While externalities such as availability of rural labor or the COVID-19 pandemic can and have affected attraction and retention of employees, dairy farms, cooperatives and processors have a high level of influence over the labor practices and approaches to human capital management they follow, with many organizations striving to be an employer of choice as a strategic priority.

**STRATEGY:** Recruiting, engaging and retaining skilled employees is key to a thriving workplace and successful business, and company- and farm-specific strategies are in place for the majority of the dairy community. At the industry level, efforts focus on guidance resources, including the National Dairy **FARM Workforce Development** Human Resources Reference Manual that provides on-farm guidance such as employee recruitment and training.

For dairy processors, the IDFA **People Strategy** provides resources to aid dairy companies in developing the workforce of the future and cultivating the next generation of leaders. The **U.S. Dairy Stewardship Commitment** provides metrics that help processors communicate jobs and benefits provided. The dairy processor-funded Processor Stewardship Reporting Tool (PSRT) enables aggregate reporting for these processor metrics, which are then published annually through the U.S. Dairy Sustainability Report. Processor reporting through the PSRT is a Stewardship Commitment term of adoption.

## Food/Nutrition Security and Accessibility

Adequate food is a human right recognized by international human rights law.<sup>25</sup> Sustainable food systems must ensure access to nutritious food for all. Agriculture is uniquely positioned to contribute to **UN Sustainable Development Goal 2: Zero Hunger**. The COVID-19 pandemic exacerbated the challenges of food security across the country, reversing progress made in previous years. **Feeding America** estimates that 45 million people (1 in 7), including 15 million children (1 in 5), may have experienced food insecurity in 2020, compared to 35.2 million individuals (1 in 9) in 2019.<sup>26</sup>

Food security and nutrition are foundational priorities within the UN SDGs, UN Food System Summit, World Economic Forum and others.

**Prioritization:** This topic, which has been a longstanding core topic of interest for the dairy community, was added to highlight dairy's position to contribute positively to increasing access to nutritious milk and dairy foods and to address food insecurity. The overall comparative position is in the medium prioritization group.

- **Importance to Stakeholders: High** - This topic is consistently of high importance to stakeholders throughout the dairy value chain; in the public, private and nonprofit sectors; and in communities across the country and around the world.
- **Significance of U.S. Dairy's Impacts: Medium** - U.S. dairy has demonstrated the meaningful impact it has in helping address hunger in local communities and supporting nutritional needs. The distribution of dairy in U.S. food banks more than doubled from 2016 to 2020, with 496 million pounds of dairy distributed in 2020.<sup>27</sup>
- **Influence of U.S. Dairy: Medium** - The dairy community is dedicated to, and well positioned for, increasing its positive contribution to ensuring all people have access to sufficient, safe and nutritious food, including milk and dairy products.

**STRATEGY:** Helping to address food security is seen as an opportunity for leadership by retailers and the dairy community. A key approach in addressing food security has been dairy's longstanding partnership with Feeding America, the nation's largest domestic hunger relief organization. Joint efforts have been aimed at supporting Feeding America's goal to provide more nutritious dairy products to its clients. The Innovation Center and Feeding America launched the **Dairy Nourishes America** initiative, which contributes to local communities and regions by supporting efforts to increase access to dairy foods for people who are struggling to feed their families.

In 2020, the Innovation Center for U.S. Dairy formed the Food Security Task Force to reaffirm dairy's commitment to addressing hunger. Bringing together representatives from leading dairy companies, retailers and nonprofits, the task force will further pursue multiple pathways to enable increased and reliable access to nutritious dairy products for Americans facing food insecurity.



## Health and Nutrition

Milk and dairy foods and ingredients nourish people and communities around the world. Further, a growing number of studies indicate that eating dairy foods is associated with reduced risk of chronic disease, including a lower risk for type 2 diabetes and cardiovascular disease, reduced blood pressure, neutral to lower levels of inflammation and improved bone health.<sup>28</sup> In addition, dairy foods provide important nutrients that help support a healthy pregnancy and are critically important sources of calories and essential nutrients to support growth and development for children. Dairy's role as a nutritious source of enjoyable, accessible and affordable food is foundational to its role in sustainable food systems.

**Prioritization:** The overall comparative position remains in the highest prioritization group, with an increase in importance/interest noted for both the dairy community and broader stakeholders.

- **Importance to Stakeholders: High** - The health and nutritional attributes of dairy consistently rank among the highest priorities for consumers and stakeholders overall. Malnutrition in all forms - undernutrition, micronutrient deficiency and overweight and obesity - is a globally recognized priority and an area of focus within the UN **Sustainable Development Goals**.
- **Significance of U.S. Dairy's Impacts: High** - Dairy's role in advancing human health and nutrition is core to the product and a mainstay for consumer trust and sales. Levels of interest have also increased with the rise in comparisons with plant-based products. The inclusion of dairy, including fat-free and low-fat (1%) milk, yogurt and cheese, in healthy dietary patterns within the Dietary Guidelines for Americans, 2020-2025 underscores the significance of dairy's beneficial impacts.
- **Influence of U.S. Dairy: High** - The dairy community directly influences the production and distribution of dairy products that provide health and nutritional benefits.

**STRATEGY:** Through the **National Dairy Council** (NDC) Nutrition Research program, registered dietitians, academics, scientists and other key stakeholders advance health and nutrition research across two main areas of study: public health and consumer-focused benefits. Across both areas, the Nutrition Research program sponsors science-based research on the health benefits of dairy products and ingredients and positions dairy's health and nutritional contributions within the broader scope of environmental and socially responsible dairy.

## Human Rights

Respect for and protection of internationally recognized human rights are foundational ethical and business responsibilities. For U.S. dairy, the most salient topics pertaining to human rights are labor related (with direct connections to the Health and Safety, Employee Attraction and Retention, and Diversity, Equity and Inclusion topics).

**Prioritization:** This foundational and cross-cutting topic was added in 2021 to underscore its importance across the value chain, and the overall comparative position is in the highest prioritization group. While violations in any sector can have a significant negative impact, human rights are an ethical imperative for U.S. dairy, and a robust U.S. regulatory environment and legal safeguards provide strong mechanisms for ensuring the protection of human rights.

- **Importance to Stakeholders: High** - Stakeholders increasingly expect disclosure on an organization's assessment of salient human rights topics and management systems such as policies and practices. In the U.S., these policies are underpinned by state and federal law.
- **Significance of U.S. Dairy's Impacts: High** - As an unwavering business responsibility and in consideration of potential impacts, this topic is rated high by default. While the U.S. legal and regulatory environment provides broad protection for ensuring human rights, risks for violations exist. The scope of this assessment is within the U.S. and does not cover business activities and potential impacts in other countries.
- **Influence of U.S. Dairy: High** - Dairy companies and farmers have direct operational control in safeguarding human rights.

**STRATEGY:** Regulatory frameworks of the U.S. market safeguard human rights, which lowers material risk of issues such as forced labor, harsh or inhumane treatment of workers, unhygienic work environments, discrimination and child labor. As such, this regulatory environment underpins dairy industry efforts, which focus on providing guidance such as an on-farm workforce safety manual and legal factsheets developed by the National Dairy **FARM Workforce Development** Program. See also Worker Health and Safety, Employee Attraction and Retention, and Diversity, Equity and Inclusion.



## Product Safety and Quality

The dairy community understands and values the confidence consumers place in the safety and wholesomeness of dairy foods and has long treated food safety as a pre-competitive and collaborative area.

**Prioritization:** This area remains high as a nonnegotiable priority, with the overall comparative position of this topic staying in the highest prioritization group.

- **Importance to Stakeholders: High** - Food safety consistently ranks as an utmost priority for the dairy community, customers and consumers.
- **Significance of U.S. Dairy's Impacts: High** - Food safety is an unwavering social responsibility and critical to the economic viability of dairy. While U.S. dairy has a strong food safety track record, there are, as with any consumable product, potential human health risks and associated reputational risks in the event of an incident.
- **Influence of U.S. Dairy: High** - Dairy farmers and processors have direct operational control to ensure the quality and safety of their products.



**STRATEGY:** Protecting consumers and their confidence in dairy requires constant diligence and investment by the industry. Food safety standards are highly regulated through both state and federal programs. The Food and Drug Administration (FDA) has primary responsibility for regulating most foods, including milk, shipped in interstate commerce. The Pasteurized Milk Ordinance sets minimum standards and requirements for the production, processing and packaging of Grade A milk, which the industry regularly updates through the **National Conference on Interstate Milk Shipments (NCIMS)** process. Further, federal law requires that U.S. milk is tested at multiple times to ensure antibiotics are kept out of the nation's milk supply. In the rare instance of a positive test at the milk plant, the milk is rejected.

The Innovation Center, through its **Food Safety Committee** and Listeria Research Consortium, convenes dairy processors to promote excellence by openly sharing knowledge and best practices, publishing tools and guidance, conducting training, leading new research, and providing pre-competitive support to the dairy community. The Innovation Center further maintains **U.S. Dairy Traceability Guidelines** that focus on product flows, labeling, recordkeeping, data collection and other protocols from the plant to end-product manufacturers that can isolate products and protect public health and prevent brand damage in the event of a food safety issue.

The **U.S. Dairy Stewardship Commitment** provides metrics that help processors communicate their commitment to food safety and traceability, and the Innovation Center also supports facilitation and processor engagement in its development of the dairy processor-funded Processor Stewardship Reporting Tool (PSRT) that enables aggregate reporting for these processor metrics, which are then published annually through the U.S. Dairy Sustainability Report. Further, a commitment to adopt and apply the U.S. Dairy Traceability Guidelines is a Stewardship Commitment term of adoption for all dairy processors.

Administered by the **National Milk Producers Federation (NMPF)**, **FARM Antibiotic Stewardship** provides education and resources to support informed decision-making for using antibiotics in dairy animals. The program's annually updated Milk and Dairy Beef Drug Residue Prevention manual educates dairy farm managers on the responsible use of antibiotics.

## Worker Health and Safety

Ensuring safe working conditions is a foundational business responsibility, with workplace health and safety a recognized human right.

**Prioritization:** This topic was elevated from a subtopic under Workforce Development in the 2019 assessment to a stand-alone topic due to increased industry attention and the high level of stakeholder interest. The overall comparative position is in the highest prioritization group.

- **Importance to Stakeholders: High** – Occupational health and safety practices are highly regulated, reflecting the high importance and interest of this topic. Consumers want to know that the products they purchase are made by people working in safe and healthy environments. Retailers and other dairy customers increasingly seek assurance of safe working conditions throughout their supply chain.
- **Significance of U.S. Dairy's Impacts: High** – The safety and well-being of the dairy workforce is key to successful operations and a core social responsibility. Even when workplace safety is well managed, there are, as with any product, potential risks and associated reputational risks in the event of an incident.
- **Influence of U.S. Dairy: High** – Employers have control over the health, safety and wellness management systems at their locations and have a high degree of influence on their workplace culture. The dairy industry is well positioned to promote strong practices and encourage ongoing improvement.

**STRATEGY:** In the U.S. market, employment conditions, including safety, are highly regulated through both state and federal laws. Given that robust legal and regulatory framework, the **National Dairy FARM Workforce Development Program** focuses on providing informational resources, such as state-by-state and federal legal factsheets, the FARM HR Manual, and the FARM Safety Manual. The FARM Workforce Development Program also offers a voluntary on-farm assessment that U.S. dairy cooperatives and processors can use through trained evaluators to advance thriving work environments. For dairy processors, a collaborative alliance between the U.S. Occupational Health and Safety Administration (OSHA) and the **International Dairy Foods Association** (IDFA) provides dairy processors and the public with worker safety information, guidance and access to training resources.

The **U.S. Dairy Stewardship Commitment** provides metrics that help processors communicate their commitment to worker health and safety. In addition, the Innovation Center further supports facilitation and processor engagement in its development of the dairy processor-funded Processor Stewardship Reporting Tool (PSRT) that enables aggregate reporting for these processor metrics, which are then published annually through the U.S. Dairy Sustainability Report.

## Other Topics

### Deforestation

Dairy feed production and farming within the U.S. are not linked to deforestation. The U.S. ranks fourth in the world among countries for forested areas and had an average annual net gain of 0.03% between 2010 and 2020.<sup>29</sup> Further, strong regulatory safeguards are in place such as the Lacey Act, which prohibits the sale, acquisition and transport of timber harvested in violation of U.S. laws.

In relation to feed production, the U.S. market has a plentiful supply of feed grains and is a leading exporter for feeds, including corn, gluten, distillers grains, barley and soybean meal. As such, there is no need to import feed as it is not an economically viable alternative for dairy farmers to purchase feed grown and shipped from outside U.S. borders. This use of domestically grown feed minimizes risks for land-related impacts in the dairy supply chain. Risks associated with deforestation outside U.S. farms and company operations are beyond the boundary of this national materiality assessment.

**Prioritization:** Based on the consideration described above, this topic was deemed not material to U.S. dairy activities and impacts within the U.S.

- **Importance to Stakeholders:** Medium
- **Significance of U.S. Dairy's Impacts:** Low
- **Influence of U.S. Dairy:** Low

### Market Development

The **Dairy Sustainability Framework** (DSF) criterion for this topic states, "Participants along the dairy value chain are able to build economically viable businesses through the development of transparent and effective markets." Robust contract laws across states in the U.S. govern product sales and distribution, ensuring farms and processors the opportunity to build viable businesses. Rather than developing in-house programs, the Innovation Center relies on the country's system of transparent and effective markets to align with this global criterion within the DSF.

**Prioritization:** There have not been any adjustments in the positioning of this topic since the 2019 assessment, and it is deemed immaterial in consideration of strategic initiatives and industry efforts.

- **Importance to Stakeholders: Low** - Customers and supply chain partners rely on the existence of transparent and effective markets in order to participate in the dairy industry. However, market development is not a focus area because the U.S. already benefits from an effective market structure.
- **Significance of U.S. Dairy's Impacts: Low** - While dairy companies have direct influence on the sale of their products, the existence of a U.S. market structure that enables these sales is already in place.
- **Influence of U.S. Dairy: Low** - As noted above, the market is mature and largely outside the control of the industry.

**STRATEGY:** The U.S. market is highly developed. Thanks to robust contract laws and other regulations that govern product sales and distributions, farms and processors already have the opportunity to build viable businesses. U.S. dairy continues to explore how it can apply this DSF criterion within the context of the U.S. market.

## Endnotes

- 1 Value Reporting Foundation. SASB Standards. Materiality Map. <https://www.sasb.org/standards/materiality-map/>.
- 2 The Stewardship Commitment for U.S. Dairy has two indicators for Workforce Development: Human Resources and Worker Safety. The significance of and interest in these related but distinct topics and the difference in management approaches and measurement led to the two being reviewed as separate topics in the 2021 assessment. This is in line with sustainability frameworks and standards such as the GRI Sustainability Reporting Standards and SASB Standards.
- 3 World Wildlife Fund. 2020. Living Planet Report 2020 - Bending the curve of biodiversity loss. [https://files.worldwildlife.org/wwfcomprod/files/Publication/file/279c656a32\\_ENGLISH\\_FULLL.pdf](https://files.worldwildlife.org/wwfcomprod/files/Publication/file/279c656a32_ENGLISH_FULLL.pdf).
- 4 Innovation Center for U.S. Dairy. 2013. U.S. Dairy's Environmental Footprint. <http://bit.ly/29qjs5i>.
- 5 Thoma, G., Popp, J., Nutter, D., Shonnard, D., Ulrich, R., Matlock, M., Kim, D., Neiderman, Z., Kemper, N., East, C., & Adom, F. 2013. Greenhouse gas emissions from milk production and consumption in the United States: A cradle-to-grave life cycle assessment circa 2008. *International Dairy Journal*, 31, Supplement 1. <https://doi.org/10.1016/j.idairyj.2012.08.013>.
- 6 2020 goal language adjusted from "Become carbon neutral" to "Achieve GHG Neutrality" in Oct 2021 to ensure clarity that this goal, per its original intent, accounts for all GHG emissions
- 7 Science Based Targets initiative. 2021. Companies Taking Action. <https://sciencebasedtargets.org/companies-taking-action#table>.
- 8 Thoma, G., Popp, J., Nutter, D., Shonnard, D., Ulrich, R., Matlock, M., Kim, D., Neiderman, Z., Kemper, N., East, C., & Adom, F. 2013. Greenhouse gas emissions from milk production and consumption in the United States: A cradle-to-grave life cycle assessment circa 2008. *International Dairy Journal*, 31, Supplement 1. <https://doi.org/10.1016/j.idairyj.2012.08.013>.
- 9 Capper, J.L., Cady, R.A., Bauman, D. The environmental impact of dairy production: 1944 compared with 2007. *J Anim Sci*. 2009; 87(6):2160-2167.
- 10 Capper, J. L., and R. A. Cady. 2019. The effects of improved performance in the U.S. dairy cattle industry on environmental impacts between 2007 and 2017. *J. Anim. Sci.* 98:1-14. <https://academic.oup.com/jas/article/98/1/skz291/5581976>.
- 11 UN FAO. 2020. Global Forest Resources Assessment 2020: Main report. Rome. <https://doi.org/10.4060/ca9825en>.
- 12 Innovation Center for U.S. Dairy. 2013. U.S. Dairy's Environmental Footprint. <http://bit.ly/29qjs5i>.
- 13 Fulhage, CD. 2000 Reduce environmental problems with proper land application of animal manure. Department of Biological and Agricultural Engineering, University of Missouri; EQ201 Web. <https://extension.missouri.edu/media/wysiwyg/Extensiondata/Pub/pdf/envqual/eq0201.pdf>.
- 14 Innovation Center for U.S. Dairy. 2013. U.S. Dairy's Environmental Footprint. <http://bit.ly/29qjs5i>.
- 15 Ibid.
- 16 Ibid.
- 17 Ibid.
- 18 Capper, J. L., and R. A. Cady. 2019. The effects of improved performance in the U.S. dairy cattle industry on environmental impacts between 2007 and 2017. *J. Anim. Sci.* 98:1-14.
- 19 UC Berkeley Hass School of Business, Center for Equity, Gender, and Leadership. 2019. Business Case for Diversity. [https://haas.berkeley.edu/wp-content/uploads/Business-Case-for-Gender-Diversity\\_EGAL\\_June-2019.pdf](https://haas.berkeley.edu/wp-content/uploads/Business-Case-for-Gender-Diversity_EGAL_June-2019.pdf). See also the Business Case Tracker for Diversity in the Workplace.
- 20 USDA National Agricultural Statistics Service. 2017 Census of Agriculture. Race, Ethnicity and Gender Profile. [https://www.nass.usda.gov/Publications/AgCensus/2017/Online\\_Resources/Race\\_Ethnicity\\_and\\_Gender\\_Profiles/cpd99000.pdf](https://www.nass.usda.gov/Publications/AgCensus/2017/Online_Resources/Race_Ethnicity_and_Gender_Profiles/cpd99000.pdf).
- 21 McKinsey & Company. 2020. Diversity wins: How inclusion matters. <https://www.mckinsey.com/featured-insights/diversity-and-inclusion/diversity-wins-how-inclusion-matters>.
- 22 International Dairy Foods Association. 2021. The economic impacts of dairy products. <https://idfa.guerrillaeconomics.net/reports/c74a12ed-66c0-4cfd-a146-e96985586b50?>.
- 23 USDA Economic Research Service. 2019. Cash receipts by state, commodity ranking and share of U.S. total, 2019 Nominal (current dollars). <https://data.ers.usda.gov/reports.aspx?ID=17843>.
- 24 International Dairy Foods Association. 2021. Dairy Delivers: The Economic Impact of Dairy Products. <https://www.idfa.org/dairydelivers>.
- 25 Office of the United Nations High Commissioner for Human Rights. 2021. Human Rights Fact Sheet 34: The right to adequate food. <https://www.ohchr.org/Documents/Publications/FactSheet34en.pdf>.
- 26 Feeding America. 2021. The impact of the coronavirus on food insecurity in 2020 & 2021. (March):7. [https://www.feedingamerica.org/sites/default/files/2021-03/National%20Projections%20Brief\\_3.9.2021\\_0.pdf](https://www.feedingamerica.org/sites/default/files/2021-03/National%20Projections%20Brief_3.9.2021_0.pdf).
- 27 Values were provided by Feeding America and reported by its fiscal year, which is July 1 to June 30.
- 28 Studies referenced include: Drouin-Chartier, JP, Brassard, D, Tessier-Grenier, M, et al. Systematic review of the association between dairy product consumption and risk of cardiovascular-related clinical outcomes. *Adv Nutr*. 2016;7(6):1026-1040. Published 2016 Nov 15. doi:10.3945/an.115.011403. Hess, JM, Stephensen, CB, Kratz, M, Bolling, BW. Exploring the links between diet and inflammation: Dairy foods as case studies. *Adv Nutr*. 2021;12(Suppl 1):1S-13S. doi:10.1093/advances/nmab108Wallace, TC, Bailey, RL, Lappe, J, et al. Dairy intake and bone health across the lifespan: a systematic review and expert narrative [published online ahead of print, 2020 Sep 14]. *Crit Rev Food Sci Nutr*. 2020;1-47.
- 29 FAO. 2020. Global Forest Resources Assessment 2020: Main report. Rome. <https://doi.org/10.4060/ca9825en>.

